

GENERAL INFORMATION

ARCHIVES OF PHYSICAL THERAPY, X-RAY, RADIUM

Original contributions, exchanges and books for review should be forwarded to the Editorial Office. All business matters including advertising should be handled through the Executive Office, Suite 716—30 N. Michigan Ave., Chicago, Illinois.

The statements in the manuscripts published in the Archives of Physical Therapy, X-Ray, Radium, are made solely on the responsibility of the author. The American Congress of Physical Therapy does not assume any responsibility for statements contained therein. Manuscripts accepted for publication in Archives of Physical Therapy, X-Ray, Radium, are for exclusive publication and may not be published elsewhere.

Subscriptions—In the United States, its possessions, and Mexico, \$5.00 yearly; Canada, \$5.50; elsewhere, \$6.50 the year.

Advertising rates on application. All advertising copy subject to acceptance by publication committee.

Published monthly at Chicago, Illinois, by American Congress of Physical Therapy.

Entered as Second Class Matter June 2, 1930, at the Post Office at Chicago, Illinois, under the Act of March 3, 1879.

DISRAELI KOBAK, M.D., Editor

Suite 716 — 30 North Michigan Avenue, Chicago, Illinois

OFFICERS AND BOARD OF GOVERNORS

AMERICAN CONGRESS OF PHYSICAL THERAPY

F. H. EWERHARDT, M.D., St. Louis, President.

GUSTAV KOLISCHER, M. D., Chicago, President-Elect.

ALBERT F. TYLER, M.D., Omaha, First Vice-President.

LUTHER A. TARBELL, M.D., New Haven, Second Vice-President.

J. SEVERY HIBBEN, M.D., Pasadena, Third Vice-President.

N. H. POLMER, M.D., New Orleans, Fourth Vice-President.

FREDERICK B. BALMER, M.D., Chicago, Secretary.

JOHN STANLEY COULTER, M.D., Chicago, Treasurer.

PUBLICATION COMMITTEE

DISRAELI KOBAK, M.D., A. R. HOLLENDER, M.D., ALBERT F. TYLER, M.D.,

HAROLD SWANBERG, M.D., JAMES C. ELSOM, M.D.

CONTENTS—APRIL, 1932

Volume XIII, No. 4

ORIGINAL ARTICLES

Studies in the Application of Heat to the Female Pelvis.....	197
.....G. D. Royston, M.D., F. H. Ewerhardt, M.D., and M. A. Roblee, M.D.	
Aids for the Hard of Hearing.....	202
.....Horace Newhart, M.D.	
A Letter of Importance.....	206
Diathermy as an Aid in the Treatment of Gonorrheal Endocervicitis.....	207
.....Abraham G. Fleischman, M.D.	
Recent Advances in Heliotherapy as Applied in Pulmonary Diseases.....	214
.....A. M. Forster, M.D.	
Physical Therapy and Traumatic Surgery.....	216
.....J. E. M. Thomson, M.D.	
Electrothermic Treatment of Accessible Malignant Growths.....	219
.....William H. Schmidt, M.D.	
A Plea for the Better Understanding of Colon Mechanics.....	225
.....Frederick H. Morse, M.D.	
Physical Therapy Office Measures Helpful in Iritis.....	230
.....Ellis G. Linn, M.D.	

EDITORIALS

Unity, Peace and Concord.....	233
The Problem of the Hard of Hearing.....	234
Occupational Therapy in Minnesota.....	235

SPECIAL SECTION

Questions and Answers.....	238
Current News and Science.....	241

THE STUDENTS' LIBRARY

Book Reviews	245
--------------------	-----

INTERNATIONAL ABSTRACTS

Abstracts of Articles on Physical Therapy, X-Ray, Radium, Biophysics and Allied Subjects.....	249
---	-----

Ultra-violet of Great Value in Malnutrition, Infections and Nervous Conditions

A prominent New York Medical authority reports the use of ultra-violet radiation in 200 cases, 30 percent of which were malnutrition cases, 65 percent were various infections and 5 percent were nervous diseases. In most of these cases general ultra-violet treatments were given. Dietary regulation and medication, when indicated, were combined with ultra-violet. A comparison of results obtained by ultra-violet with results by change of climate showed that the latter benefited only 50 percent of cases; while 90 percent of those treated by ultra-violet were definitely improved. The results achieved by ultra-violet in these cases include: A destruction of infection, general nutritional improvement, better utilization of foods and gain in weight. Relief of fatigue and depression was also very noticeable. General body radiations as outlined in the above cases may be given very efficiently and successfully with the Britesun Single Arc Automatic Lamp with Transformer. This is a high intensity lamp delivering 22 amperes at the arc and drawing 15 amperes from the line.

Write for free copy of booklet "Light Therapy"

BRITESUN, INC.

ULTRA VIOLET-RADIANT THERAPY-INFRA RED

3735-39 Belmont Avenue, Chicago



A-120 Single Arc Automatic Lamp
with Transformer



Read What These Physicians Say

Best Salve We Ever Tried.

"We have been using Mecca Compound for over six years and like it better than any salve we have ever tried. It is soothing, and restoration is rapid under its application."—(Signed) Lydia Reaugh, Supt., Dr. Nichols' Sanitorium, Savannah, Mo.

Uniform Satisfaction.

"I am glad to say my experience with your Mecca Compound has been one of uniform satisfaction."—(Signed) W. John Harris, M.D., St. Louis, Mo.

Cannot Buy Anything Better.

"I can say that Mecca Compound is one of the best dressings for a burn or scald that I have ever seen."—(Signed) Dr. A. O. Wyland, Underwood, Iowa.

For BURNS—SCALDS SUNBURN—IRRITATIONS

MECCA Compound Ointment is radically different from all other like preparations. Its remarkable soothing quality is evident immediately upon application to a burned or irritated surface. It may be used successfully on the tenderest skin, and results from its use are always a source of great satisfaction to the physician as well as the patient. It is a product of many years experiment by A. D. Foster, a chemist formerly associated with Professor Gustave Bode, an outstanding figure in his profession.

SAMPLE FREE

THE FOSTER-DACK CO.,
3148 Cottage Grove Avenue, Chicago, Ill.

Please send me a free sample and full information regarding your Mecca Compound. It is understood that sending this coupon involves no obligation on my part.

Name.....

Address.....

Simplifies the technical problems of Electrosurgery

*The first Electrosurgical Unit with which the surgeon
himself may operate the entire range of control*

DURING the past five years our technical engineers have been close observers of the various applications of electrosurgery, in view of studying the technical requirements of the surgeon in his use of specialized apparatus for this purpose.

From the several experimental designs developed during this period, the Victor Electrosurgical Unit was finally evolved. It is believed that in this design surgeons will find the most practical solution to the various technical problems as cited in the published reports.

Briefly, the Victor Electrosurgical Unit offers the following distinct improvements and advantages:

Utilizes two valve tubes for producing currents of constant oscillation, essential to highest "cutting" efficiency, and without faradic effect.

Introduces an entirely new system of control with added steps of regulation, all of which the surgeon may quickly and conveniently manipulate during actual operation, without having to depend on a trained assistant.

With three independent leads from the instrument the surgeon has three different electrodes immediately available for use selectively during the operation.

Through the 4-step selector switch the operator regulates the quality and intensity of current output. This is supplemented by an on-and-off foot switch, which through its 3 buttons further regulates the intensity of current through each step of the selector switch. Thus a total of 12 steps of control is available, offering a complete range of regulation.

The selector switch handle, which may be operated by the surgeon, is removable for sterilization.

The coagulating current is obtained through the fourth button of the selector switch, the intensity of which is in turn regulated through the 3-button foot switch.

The introduction of foot-switch control with this unit is considered an outstanding contribution toward increased operating efficiency, through the simplification of technic that it has made possible. Furthermore, the foot switch leaves the surgeon's both hands free in the field of operation.

The power and range of this unit is such that it will readily sever fat, muscle and other tissues—from the heaviest to the most delicate—the refinement of control permitting the exact quality of current to be selected for the work in hand. Compactness of design makes it convenient to carry the instrument from room to room.

The prediction seems fully justified that, with the advent of the Victor Electrosurgical Unit, refinements in technic will be realized, and new and important fields opened to this type of surgery.

**GENERAL  ELECTRIC
X-RAY CORPORATION**

2012 Jackson Boulevard

Chicago, Ill., U. S. A.

FORMERLY VICTOR



X-RAY CORPORATION

Join us in the General Electric program broadcast every Sunday afternoon over a nationwide N. B. C. network.



...Modernize your medical practice with **COLD-QUARTZ**

ULTRA-VIOLET LAMPS *the last word in modern therapeutic equipment.* **COLD-QUARTZ** ULTRA-VIOLET LAMPS give parallel ray radiation—*controllable; measurable; equal side emission with end emission; accurate dosage with greater ultra-violet intensity.*

Electro-Therapy Products Corp., LTD.
LOS ANGELES, CALIFORNIA

BRANCH OFFICES:

NEW YORK
155 East 44th St.
SAN FRANCISCO
450 Sutter St.

CHICAGO
920 Michigan Ave.
SEATTLE
1411 4th Ave.

ST. LOUIS
634 No. Grand Ave.
MINNEAPOLIS
346 Medical Arts Bldg.

For Complete Details Write "Dept. AA," 1128 Venice Blvd., Los Angeles

STUDIES IN THE APPLICATION OF HEAT TO THE FEMALE PELVIS *†

G. D. ROYSTON, M.D., F. H. EWERHARDT, M.D.,

and

M. A. ROBLEE, M.D.

ST. LOUIS, MO.

The studies in the application of heat to the female pelvis have lead to the devising of ways and means that have been of value in obtaining beneficial results. The purpose of this paper is to review in sequence the development of these various methods. We think we know what an ideal electrode should be like, but we confess that we have not yet developed it. It is hoped that by a study of this review of our efforts, certain facts of value to our problem will be brought to light. The clinical results obtained will not be analyzed in this paper but will form a paper to be published at a later date. Reference to our former preliminary publication, "The Development and Effect of Deep Seated Heat in the Female Pelvis." *Arch. Phys. Ther., X-Ray, Rad.*, Vol. XI, No. 8, (August) 1930, is made in this paper without further acknowledgment.

Let us first consider the high frequency current, i. e., diathermy, as a source of heat supply to the female pelvis. The Corbus & Chapman electrodes have been in wide use for sometime, but in our opinion their inadequacy is due to their insufficient size and inability to expand and fit the vagina or cervix. Heat conductivity of metal is a factor in thermometer readings when the bulb of the thermometer touches or is close to the metal, the electrode absorbing heat from the surrounding media. In our study of various technic we took cognizance of this factor and feel that our figures are true tissue heating readings.

Too long have we hoped because we were so taught to believe, that the high frequency currents passed through the heterogeneous tissues we wished to heat. On the basis of our studies we now desire to state very emphatically that high frequency currents

never pass through a dense substance if they can, instead, get around the tissue and traverse a path offering less resistance. When the fallopian tubes, ovary, uterus and cervix are to be heated, a belt is fastened around the abdomen, or plates are used, such as an abdominal or lumbo-sacral pad, and a vaginal electrode is inserted as an active electrode. Are the pelvic organs heated directly by diathermy, or does the current pass by way of the muscle-fascia-skin route over the vulva into the vagina? True, the pelvic tissue becomes heated to a certain extent, but is this true diathermy heat or conductive heat? From our clinical experiments with thermometers in the urethra, cervix and rectum, and from our work on dogs with the abdominal cavity open and thermometers in the tube, uterus, adnexal region and abdominal walls, we are convinced that it is possible, by the application of proper technic, to heat the entire mass of the female pelvis to not only a physiological tolerance but even beyond that point. In other words, we can introduce if we so choose a heat whose intensity is damaging to cell function. However, before this happens, the heat regulating mechanism of the body apparently gives us warning signals. We have consistently found that after a given period varying around twenty minutes, there occurs a drop in the thermometer reading of from 2 degrees F. to 4 degrees F. The heat regulating apparatus is evidently operating in a direction of protecting the local area by increasing the blood flow and thereby dispersing the accumulated heat. The body temperature rises as evidenced by the higher thermometer readings of the mouth.

We have stated that we believe that by means of proper diathermy technic a high degree of heat may be diffused within the pelvis, including the uterus, tubes and adnexa. In order to obtain these satisfactory

* Read at the Tenth Annual Meeting of the American Congress of Physical Therapy, Omaha, Nebraska, Oct. 6, 1931.

† From the Departments of Obstetrics and Gynecology and Physical Therapeutics, Washington University School of Medicine, St. Louis, Mo.

temperature readings we have found it necessary to observe the following points, namely:

1. That the vaginal electrode must have sufficient area and be so constructed as to expand fully the vaginal wall.

2. That there be perfect insulation from the skin at the vulva.

The first method used in applying diathermy in our series was the abdominal plate and lumbo-sacral plate. This gave little or no cervical temperature rise and was therefore discarded. The second method used was the introduction of a bivalve vaginal speculum as the vaginal electrode with the handle of the speculum turned upward toward the symphysis pubis. This handle served as a binding post. When the blades of the speculum were opened wide, higher rectal and urethral temperatures were noted than cervical canal temperatures. Likewise when the blades were closed around the cervix, higher temperatures were recorded within the cervical canal than in the urethra and rectum.

It was felt that if a two-blade electrode was of value, a four-blade electrode would be of greater value. The medical school shop mechanic was instructed to make an expansile over-lapping four-blade electrode which could be enlarged after placing it within the vagina. To our surprise this instrument gave no higher intra-cervical temperature than the two-blade vaginal speculum. High urethral and rectal temperatures were easily obtained.

Next, this overlapping four-blade instrument was modified to fit around the cervix. This instrument which is now known as the Zener electrode, gave approximately uniform intra-cervical, urethral and rectal temperatures. It was necessary to insulate this electrode at the junction of the vulva and vagina to prevent current leak by way of the muscle-fascia-skin route bi-passing the deep vaginal vault contact.

After a few months use of the Zener instrument it was noted that the hinged blades became loosened and corroded, which seriously interfered with the passage of the current. We again returned to the original four-blade expanding instrument and reduced two of these blades to a smaller size.

The four blades were so constructed that after the instrument was placed in the vaginal canal the two outer and larger blades would expand and make close contact with the vaginal wall, while the inner and smaller blades were made to contract and partially encircle the cervix uteri. These four blades are hinged to a bakelite cylinder which serves as a vulvo-vaginal insulator, the whole forming one metal mass serving as the active electrode, while the usual block tin belt around the waist served as the dispersing electrode.

This instrument gave us the best results thus far, and in our hands, we had no difficulty in fitting the electrode properly in position. In the hands of less experienced technicians, however, it may offer some difficulty at first, but a gynecologist or a good technician would have little difficulty in using the instrument. This instrument was described at the meeting of the American Congress of Physical Therapy, held in St. Louis last year.

While working with these various diathermy electrodes, the so-called Elliott method was brought to our attention by Dr. George Gellhorn, and we decided to use it in our study, since our primary object was to discover ways and means of heating the female pelvis. Drs. F. C. Holden and C. Elliott devised a hot water distensible rubber bag for vaginal distention and heating purposes in the treatment of pelvic inflammations. Dr. F. C. Holden's paper on the use of this method was published in the July, 1931, issue of the *American Journal of Obstetrics and Gynecology*. This machine consists of a pump and electric heater which circulates hot water through a "U" shaped, thin-walled, distensible rubber bag which fits into the vagina. The use of water temperatures at 130 degrees F. is advised by Drs. Holden and Elliott in the treatment of pelvic inflammations. This, of course, is not tissue temperature. With this apparatus we recorded urethral and rectal temperatures of about 109 degrees F. when the water temperature was circulating at 128 degrees to 130 degrees F. This corresponded well with the diathermy temperatures that we were able to produce.

After experimenting with the Elliott method for some months, we became in-

terested in attempting a new method of heat penetration by diathermy, applied by some sort of distensible vaginal electrode, believing that distention of the vaginal vault was desirable in any method of treating the pelvis. Dr. Royston suggested the use of mercury within a tissue container which would distend the vagina when the patient was placed in a Trendelenburg position. The tissue container, such as a large "fish skin" or bladder, would be flexible enough to distend when the mercury was poured into it. The bladder being animal tissue, would permit ready passage of the current from the mercury to the patient's tissues. It was here also found important to insulate the mercury containing tissue from the vulvovaginal junction. There was considerable technical difficulty in obtaining electrical contact between the mercury and the wire from the diathermy machine. An abdominal belt was used as the dispersive electrode. It was necessary to give all the treatments with the patients in a marked Trendelenburg position, in order that the weight of the mercury would properly distend the tissue container. This method was theoretically ideal; we were able to get satisfactory temperature readings and, in addition, the weight of the mercury flattened out the vaginal vault thereby giving greater surface area in the region of the adnexa and cul-de-sac. However, we once more met with difficulty. In this case it was the patients who felt that the long continued Trendelenburg position was too arduous. Because of these complaints the knee chest positions were attempted but with little or no relief from discomfort. Vaginal distention was attempted with the patient in an almost prone position, but there was not sufficient distensibility or mercury contact. At present we are testing the use of the mercury within the animal tissue container with the patient in the Sim's position; alternate treatments being given with the patient in left lateral prone and right lateral prone position with buttocks elevated on a pillow. We have also used mercury inside a thin-walled rubber bag, not as an electrode, but only to furnish a means of distention. The outside of the rubber bag is covered with tin foil sheets, or thin, closely fitting metal strips or buttons overlapping like fish scales. This flexible outside metal covering to the rubber bag

furnishes the electrode contact within the vagina, but to date it has not proven entirely satisfactory.

This study has been carried on over a period of three years, but we did not commence to do much clinical work until about a year and a half ago. Our clinical observations were made on over one hundred selected cases who were carefully examined, repeatedly checked up and kept under observation over a period of several months following the last treatment. The results were not as favorable as we had hoped they would be, but sufficiently so to warrant a continuation of our studies until, eventually, we will be in a position either to prove or disprove the desirability of using deep seated heat in the treatment of chronic pelvic inflammations. We shall be guided in this work by using and developing electrodes which embody what we believe to be three important points, namely:

- (1) It should be distensible in nature and of sufficient area to occupy the adnexal and cul-de-sac regions.
- (2) There should be sufficient cervical contact.
- (3) There should be insulation from the vulvovaginal junction.

Conclusions From This Study

- (1) The object of this investigation was to determine the possibility of heating deep seated pelvic tissue.
- (2) It was found that with certain variations in diathermy technic heat can be produced within the pelvic region, as witnessed by the raised thermometer readings of cervix, 110 degrees F.; rectum, 110 degrees F.; urethra, 110 degrees F., and higher.
- (3) It is our opinion that failures in the past to obtain this distribution of heat was due to inadequate electrode surface area, a lack of vulvovaginal insulation and insufficient vaginal vault distensibility.
- (4) We observed that when the temperature readings in the cervix, urethra and rectum were above 110 degrees F., the border line of physiological tolerance had been reached, and increasing the heat beyond this point may endanger the health of the body cells.
- (5) Our study leads us to believe that intensive heat treatment, in the presence of

active acute infection of the female pelvis, is contraindicated.

In addition to our studies in medical diathermy we have used surgical diathermy in the form of coagulation in the treatment of chronic cervicitis. In the July, 1931, issue of the *American Journal of Obstetrics and Gynecology*, under the title of "The Treatment of Cervicitis by Cautery and Electrocoagulation," certain principles were outlined. Now, over a hundred cases of chronic cervicitis have been treated by this electrocoagulation method described by Roblee.

Our experience with a limited number of cases using the cutting current and Hyam's conization technic, leads us to feel that this was only suitable in a limited number of cases of chronic endo-cervicitis, in which no cystic change was present. In our experience there was some tendency towards hemorrhage.

We also studied the effects produced by the Ende-Cherry coagulation bipolar intra-cervical electrode. This we also feel is only suited to a limited number of cases of chronic endo-cervicitis in which no cystic change has taken place. This electrode when placed within the cervical canal, will first desiccate the surrounding tissue by the passage of the high frequency currents from one metal strip to the other. With this type of electrode the depth of diathermy penetration is limited to the separation of the metal strips. As soon as desiccation takes place and before coagulation is completed the dried tissue becomes a poor conductor of the high frequency current. This poor tissue conductivity makes a shortage across the bipolar electrode with the production of intensive heat. Treatment should be stopped before this stage is reached. However, in our experience this stage has occurred all too soon, before sufficient depth of coagulation has taken place. Thus, unless the procedure is very superficially carried out we have first a mild coagulation or desiccation of limited, and in some cases inadequate depth, followed by intense conductive heat of the hot cautery type and no diathermy heat at all. The point in question is not a criticism of the Ende-Cherry electrode, but to raise the question, should not coagulating electrodes always be buried within the tissue that is to be coagulated and not just in contact with the tissue surface?

The depth of penetration and the direction of the coagulation is not controlled when a ball electrode is used. The same applies to the use of a disc electrode. Coagulation is usually off one area and not the whole area evenly. A needle buried within the tissue is satisfactory but since its area offers so small a contact, almost immediately it becomes inadequate. We use a small curved or slightly hooked knife blade which can be buried easily within the tissue to be coagulated and can be turned about to cone out the pathology requiring destruction.

In most types of chronic cervicitis the pathology is not concentric from the endocervical canal, but is eccentric, that is rolled out, everted and eroded when Nabothian cysts are present, and require an eccentric removal by varying depths of coagulation. We employ a current to give instantaneous coagulation to the point of boiling the tissue around the buried knife blade electrode. Operation is by the foot switch control. The coagulation is as much under the operator's control as if he were using an ordinary scalpel to cut away the cervical tissue. There is too much change in tissue resistance, caused by the different types of pathology found in the cervix, to accomplish proper depth penetration of coagulation by only the regulation of current strength and time of current flow. All sparking or fulguration should be avoided when true coagulation is desired. We feel that there is an essential difference between heat applied from an actual cautery and surgical diathermy heat. Surgical coagulation is consummated within the tissues. It heats from within outward, and air is excluded, hence there is no carbonization. Actual hot cautery heats from the surface inward and the tissue is carbonized because oxygen is present. We think carbonization of tissue promotes subsequent scar tissue formation. True coagulation, we feel, adds little or no subsequent scar tissue because carbonization is reduced to a minimum.

To give adequate clinical analysis as to therapeutic results obtained will require an additional paper which is forthcoming.

Summary

Our best results were obtained in chronic and subacute gonorrheal salpingitis where

mixed infection was not present, and where chronic cystic cervicitis was eliminated by coagulating methods in addition to medical diathermy procedure.

The poor results were in cases of chronic pelvic cellulitis of long standing.

Chronic cystic cervicitis very probably acts as foci of pelvic infection and is capable of repeated autogenous reinfection.

In evaluating the tendency of recurrence in all chronic pelvic infections one must remember the possibility of reinfection of autogenous and exogenous origin.

In the presence of active, acute infection, applied local heat is contraindicated.

600 S. Kingshighway Blvd.,
St. Louis, Missouri.

Discussion

Dr. Disraeli Kobak, (Chicago, Ill.): The penetrating power of diathermy is one of the oldest issues raised by certain of the pioneer workers with high frequency current, and the speaker and his co-workers are following in well trodden paths in their attempts to determine the best means to produce a diffusion of heat penetration in affections related to the uterine adnexia. Among the outstanding workers in the problem we recall such names as von Zrynek, Laqueur, Wildermuth, Bordier, Nagelschmidt, Ullmann, Dowse and Iredell, Bachem and others. All apparently have added a definite amount of information to this crucial problem. In spite of all that has been said on this subject it still remains the bone of contention, due no doubt, to the fact that newcomers in the field are either poorly oriented with the facts as they have been published, or because they have been for the moment dazzled by their enthusiasm for a new (sic) technic.

The issue raised by Ewerhardt and his associates in regard to one's ability to produce an even heat penetration by means of a high frequency current in tissues of variable densities is a very practical endeavor. The answer is self-evident to all who are familiar with the literature on the subject. The conclusion could not be otherwise than that arrived at by these workers; namely, that it is sheerly an impossible task. And yet, in spite of proof to the contrary, many competent workers have demonstrated the possibility of raising the temperature of the endocervical canal with any variety of vaginal electrodes. Favorable clinical results with diathermy treatment of the cervix and its adnexa, as well as affections closely and distantly related to it have been reported by many leading authorities, as, for example, Cumberbatch and Robinson in England, and Gellhorn in America. The conclusion one is forced to accept is that in spite of or because of the heat penetration there is a favorable amelioration of symptoms. Thus it matters little in the end whether the heat is diathermic or perithermic in character so long as the results obtained are favorable to the situation under treatment.

In the light of recent personal studies on the effect of diathermy on the colloid constituents of the blood, I am convinced that the major influence of high frequency current is even more profound than that for which it has been credited. Hyperpyrexia treatment in parietic patients is not directed to the treatment of the patient's brain or cord. The effect of such treatment provokes definite changes in the plasma of these patients. The metabolites in the plasma of the blood are invariably influenced. The colloid particles become dispersed and dehydrated, a fact which can be demonstrated under dark field studies with the ultramicroscope.

That there is no direct or local specificity to fever or heat therapy, one only needs to recall the sometimes favorable influence of protein therapy in many unrelated diseases, the reported cures of erysipelas in the presence of high fever, the disappearance of an acute Neiserian infection when associated with an intercurrent affection resulting in a production of high fever. The literature even contains reports of cancer cases favorably influenced by high fever. The therapeutic possibilities of fever therapy by means of high frequency current are still unexplored pages in modern medicine. Its interpretation and control requires other means than that employed in our laboratories. Since physical therapy utilizes physical agents, it would not be amiss for students of the subject to check and control their results by means of better analytical controls than is currently utilized in medical practice. I call attention to the neglected field of physical chemistry, rather than physiologic chemistry as the best guide for us.

If I am picturing to you the tomorrow of diathermotherapy, I am, nevertheless, aware that there is at present a lot of aimless and questionable work done in the name of diathermy. Because of this, and the confusing opinions within our ranks many honest practitioners have voiced their disappointment. Many failures have been blamed on diathermy, when on the contrary the fault was really due to poor diagnosis or poor technic. The dictum should be, never to treat acute infections, except pneumonia, with diathermy. The work of Ewerhardt and his associates is, therefore, a laudable effort to reduce the "myst" from the mysteries of diathermy in the treatment of cervical affections.

Dr. F. H. Ewerhardt (St. Louis, Mo.), closing discussion: I want to say in closing that Dr. Kobak is entirely right when he says that he is not so much concerned with what causes the heat so long as we know we have heat present.

I take the same position here that we take in the subsequent paper, which will deal with the clinical aspects of this work. This paper, however, dealt more specifically with this question: Can we heat the pelvis? In our part of the world, around our neighborhood, the question has been: Can you or can you not heat the deeper tissues of the pelvis? We set out to prove that, and that is what this paper means today.

I agree with Dr. Kobak entirely. That is my explanation as to why we didn't stress that particular point.

I am glad he brought out the question of acute infection. We did try, because some people told us they had had success in treating acute pelvic conditions, applying high temperatures. It was not successful. Every case that we tried it on flared up, so we concluded that heat in acute cases is contraindicated.

Past-President Fouts (American Congress of Physical Therapy): Gentlemen, I hope those of you who are only slightly familiar with physical therapy and some of the things done along that line have at least gotten an inspiration and have been given some food for thought. I believe you have listened tonight to two as able discourses as you have heard from this platform in some time. In fact, I am frank to admit that much of it was over my head, yet I am thoroughly convinced that the essayists and the men who spoke to you were qualified and knew what they were talking about. It is a sample, I must say, of the programs we have at each of the annual meetings of our organization.

We have been glad to entertain this organization

here in Omaha this year. We have had two days of as splendid programs as I have ever attended anywhere at any time of purely scientific, worthwhile, common-sense stuff. We will be glad to have you come over. We are at the Fontenelle tomorrow and Thursday. Tomorrow evening is the annual banquet. It might be worth while, if you can find time, to come over and dine with us, rub shoulders with some of the Fellows, and find that they are really doctors, real fellows, and that most of them know what they are talking about.

The next feature is a sound motion picture, to which Dr. Ewerhardt referred in his paper, and shows the method employed by Dr. Cherry of New York City in the treatment of endocervicitis. He was kind enough to send seven reels of motion sound pictures here, part of which has been shown at our meeting. I believe three reels are at our disposal tonight and were brought over for the continuation of our program.

We appreciate this opportunity of meeting with you. I am sure the Congress appreciates it, and we hope you will come over to visit us.

AIDS FOR THE HARD OF HEARING *

HORACE NEWHART, M.D.

MINNEAPOLIS, MINN.

There are in our country several million individuals suffering from a hearing impairment sufficient to cause them decided economic disadvantage, limit their educational development and impose a real barrier of social isolation from their fellows. Because they too often seek to conceal their defect, are retiring and unobtrusive we give them little thought. The unhappy effects of their handicap we have learned can be greatly ameliorated by various compensating devices and provisions for their rehabilitation. The possible benefits to this large group which would result from a wider application of these measures are not sufficiently well known even to the medical profession. This fact justifies a brief presentation of a few thoughts suggested by the title of this paper.

During recent years there have been notable advances in the efficiency as well as a broader range of practical usefulness of instrumental aids for the hard of hearing.

Mechanical aids are of two kinds—the non-electric and the electric. The former, largely superseded by the newer electric devices, include the many types of tubes, horns, conches, auricles, etc., of various materials which depend for their effectiveness on collecting, amplifying, through resonance, and conducting to the ear with the least distortion, the sounds of articulate speech. Many of these devices have the disadvantages of conspicuousness, limited power, bulkiness and weight. They possess the advantages of simplicity, relatively low initial cost, no expense for upkeep and are always in working order. They are very serviceable for many persons, especially when the auditor and speaker can be in close proximity. Their more general and earlier use should be encouraged for the benefit of the afflicted, the speaker and the public.

Electric aids are constructed on the principle of the telephone. The first successful hearing aid of this type resulted from the efforts of Alexander Graham Bell to devise a help for his deaf wife. His success gave

* Read at the Tenth Annual Meeting of the American Congress of Physical Therapy, Omaha, Nebraska, Oct. 6, 1931.

the world the commercial telephone. The most recent electrical hearing aids include a wide variety of models from the simple, single microphone type with battery, rheostat and disc receiver at a modest price, to the most powerful non-portable installations, using for amplification vacuum tubes, and having attachments for use with the radio, telephone and phonograph. They are used with multiple outlets in different parts of the home, the office, the auditorium, the theater and the class room for the hard of hearing child.

The desirable qualities in any portable electric hearing aid include:

- (a) Faithful reproduction of speech with a minimum of distortion.
- (b) Sufficient power to fully compensate for the hearing loss of the individual user.
- (c) A minimum of internal noises originating within the instrument itself.
- (d) Compactness, lightness and inconspicuousness.
- (e) Dependable mechanical construction.
- (f) Low initial cost and upkeep.

The portable electric hearing aid entirely fulfilling all of these requirements has yet to be produced. No small instrument yet made is free from distortion, especially when great amplification is used.

Largely from the stimulus of a survey of electrical hearing aids conducted by a special committee of the American Federation of Organizations for the Hard of Hearing, with the generous cooperation of the Bureau of Standards, much progress has been made, especially in the matter of rating instruments according to their real efficiency. Outfits now measure up well to the claims of the manufacturers. The makers generally are maintaining high ethical standards in the manufacture, distribution and servicing of their products.

Distortion of speech is the most difficult problem of the acoustic engineer in the production of compact, portable hearing aids. Distortion increases notably as the intensity of the reproduced speech is increased, because, as the fundamental tones are made louder all sounds are not proportionately intensified, there being at some pitches relatively increased loudness. Adventitious sounds are also amplified in variable degree and cause the user great annoyance and confusion, for he has long since been unable to hear these adventitious sounds. These the person who

hears normally has learned to automatically suppress and ignore. The result of these disturbing factors is diminished intelligibility.

In connection with the use of electrical hearing devices Dr. Harvey Fletcher, director of the Acoustic Division of the Bell Telephone Laboratories, classifies all hard of hearing persons in four groups: (1) Those who easily hear the ordinary voice at two to four feet. Tested with the audiometer these show a hearing loss of thirty sensation units for the frequencies of 100 to 3000 double vibrations per second in the better ear. (2) Those whose loss is from thirty to sixty sensation units. (3) Those with a loss of sixty to eighty sensation units, and (4) those whose loss is above eighty sensation units.

Assuming that we could obtain amplification ideally free from distortion, the needs of the first three groups could be practically met by two types of instruments, the first having a capacity to overcome a loss of thirty sensation units, the second sufficiently powerful to overcome a loss of fifty to sixty sensation units.

In a quiet room a person of the first group requires no aid when close to the speaker. In a room with conversation or other noises he would get sufficient help by using the less powerful instrument. The more powerful instrument with its much wider range of volume would meet the ordinary needs of the second and third groups. Thus all three groups can be theoretically greatly helped by the best models of portable electric hearing aids as now constructed. The first group requires only the simplest form of instrument with single or dual microphone and the midget receiver. Added power is obtained in the instruments of larger capacity by increasing the number of microphones (some models having as many as four in one housing); by substituting the more conspicuous but more sensitive disc receiver for the midget type, and by the addition of the so-called "booster" or amplifying microphone, which is the most notable recent improvement in the construction of portable electric aids. This device greatly increases the amplification with a minimum amount of distortion.

The needs of the fourth group present special engineering difficulties and can only be met by the very powerful non-portable vacuum tube outfits.

The problem of avoiding all internal noises

in portable sets is yet to be solved. In the matter of lightness, compactness and fine workmanship several manufacturers now put out ideal instruments. Several makers have greatly simplified and lessened the cost of upkeep by using standard flashlight batteries.

The cost of portable electric hearing aids is largely proportionate to their capacity for servicable amplification, running from \$35.00 for the simplest set of moderate power to \$110.00 for the best outfit of wide range, and equipped with dual microphone, a "booster" microphone amplifier and both a midget and a disc receiver. Non-portable vacuum tube outfits for the home or office, operated from the electric light circuit, having multiple outlets and various supplementary appliances cost from several hundred dollars to several thousand, and are said by their enthusiastic users who can afford them to be well worth the price.

Vacuum tube sets are now very advantageously used in schools for the deaf to teach speech to the very deaf and as a means of instruction in their general education. With the radio and phonograph attachments the very hard of hearing are again enabled to get great pleasure and entertainment through the ear. Sound-picture theaters and progressive churches are successfully installing the latest multiple outlet hearing aids with individual control. These multiple outfits are rendering conspicuously fine service in the rooms of organizations for the hard of hearing.

A device which has lately been made available consists of a vacuum tube amplifying attachment for the commercial telephone, whereby even a very hard of hearing person can satisfactorily use the telephone. This can be attached to any telephone by the local telephone management at a very moderate rental. It will be greatly welcomed by many deafened persons who have been deprived of this means of communication.

It must be admitted that all persons having apparently the same degree of hearing loss cannot with equal comfort and success use an electric hearing aid. Some persons seem unable to find any device which they can use. It is our experience that these individuals who have the least difficulty in using an electric device are those with an obstructive type of deafness; those having a mixed deafness are less likely to obtain help, while persons with a preponderance of loss for the high

tones and having greatly diminished bone conduction find the least satisfaction in a hearing aid.*

Recommending or prescribing an electric hearing instrument is a matter calling for great tact, persuasive ability and a knowledge of the psychology of the hard of hearing. One often has first to overcome the prejudice of the deafened person himself. He refuses to acknowledge his defect both because of pride or vanity and for economic reasons. He postpones as long as he can the time when he takes advantage of a hearing device. This is a serious error for he loses valuable time which should be used in acquiring experience and skill in the art of excluding the adventitious sounds always present. If he waits until his deafness has become advanced he encounters greater difficulty in suppressing the magnified adventitious sounds and in correctly differentiating and interpreting the important sounds of articulate speech.

A hearing aid is most advantageously prescribed only after a careful otological examination. An audiogram is of great assistance in determining the type of hearing aid which will be most useful in a given case. Because of the different needs of different individuals and the variation in the acoustic qualities of the instruments of different makers, it is important to advise the prospective purchaser of a hearing aid to test out carefully various models of different producers before making a final purchase. The otologist can greatly assist the purchaser in the selection of such an aid. The choice should be based not on loudness, for the ultimate test of serviceability is that of intelligibility when tried out in comparison with other instruments. The makers of hearing aids of real merit encourage this plan of purchase.

Many patients when they begin the use of a hearing aid require much encouragement to persist long enough in their efforts to get accustomed to the instrument. In some cases it requires months of persistent practice. Victory comes in time to the majority of those who will persevere.

Because of the great value of even a small amount of residual hearing, in view of what can be accomplished with a hearing device, it

* Since writing the above we learn that at least one manufacturer of electric hearing aids has attempted to improve his product by the provision of receivers in which filters have been arranged to reduce the intensity in different portions of the tonal scale, which, in theory at least, should be of real advantage in certain types of deafness.

becomes the specific duty of the physician to encourage the hard of hearing patient to conserve by every possible means whatever remnant of hearing acuity he may possess. Too often he is bluntly told, without even the benefit of a careful examination, that nothing more can be done for him. It may be true that local treatments will yield no results. But there exists in not a few cases the possibility that some overlooked or neglected factor in the patient's general condition may be active and cause further deterioration. This, if discovered by thorough examination may be removed with possible arrest or retardation of the progressive loss in hearing. With our increased knowledge of the relationship of ear diseases causing deafness to such conditions as focal infections in remote parts of the body, dysfunction of the ductless glands, neurosyphilis, occupational disease, bad habits regarding exercise, rest, elimination and the intake of toxins in the form of harmful foods, alcohol, tobacco, etc., the hard of hearing patient should be given the benefit of the doubt. He needs the guidance and friendly interest of a medical advisor who will check over his general health as well as his hearing acuity. He should have a periodic health examination at frequent intervals, and be encouraged to take local treatments when they may be of benefit, especially after attacks of inflammatory disturbances of the upper respiratory tract likely to cause further hearing loss. Above all, he should be warned of the dangers of falling a victim of the pseudo ear specialist or quack.

Two other important factors must be mentioned in connection with the amelioration of the condition of the hard of hearing. The first is lip reading or speech reading, one of the greatest boons to those with a handicapping hearing loss. The victim of this condition should acquire this most helpful accomplishment by systematic study as soon as he finds his hearing loss causes him embarrassment. In many cities classes in lip reading for the adult are provided by the public school officials.

The other important factor in the amelioration of the condition of the adult deaf person is found in the fine facilities afforded for his rehabilitation in the efforts and activities of the local organizations for the hard of hearing. These are today carrying on a most creditable work in one hundred American

cities. Their national organization, the American Federation of Organizations for the Hard of Hearing also maintains the so-called Everywhere League for those isolated members who do not have access to local units. These receive a large stimulus and inspiration by keeping in touch with others similarly afflicted.

Deafness, while in many cases incurable, is being made vastly more tolerable by the help of hearing aids and the application of modern sociological methods in helping the deafened to help themselves. The physician can be of great assistance to this large group in their efforts to solve their peculiar problems.

Discussion

Dr. John C. Davis (Omaha, Nebraska): This excellent paper is so concise and so complete that very little is left for discussion. However, in the few remarks that I shall make it will be my privilege to emphasize a few points.

Most deaf people are inherently prejudiced against any visible artificial mechanical aid. Many will discard expensive sets after only a short trial because of false pride. Therefore, I feel we should personally help the patient select the type of artificial hearing apparatus best suited to his particular needs.

Patients with progressive deafness that is not helped appreciably by treatment should receive instruction in lip reading or secure some suitable artificial mechanism before it is too late.

I had the privilege early this summer of going to Dr. Goldstein's Institute for the Deaf in St. Louis and it certainly gave me a much broader idea of lip reading. Some of you probably saw the play that he puts on there. Small children from two and three up to twenty or twenty-five who couldn't hear a single thing, sang and put on a little minstrel show. I regarded it as one of the most impressive things I have ever seen.

Dr. G. Henry Mundt (Chicago): There are two reasons why I want to discuss this paper. One reason is because I feel that Dr. Newhart is engaged in a very laudable piece of work which should logically be done by somebody in the medical profession and preferably by an otologist. The doctor was head of the American League of Federations for the Hard of Hearing. Ordinarily medical men are too busy in other medical problems to take up a general sociological problem such as the problem of the deafened, but Dr. Newhart was not too busy for that. It is a laudable act for which the medical profession should be very grateful to Dr. Newhart.

I know that the essayist is correct in his contention that deafened individuals should learn lip reading. I had the unusual experience of having a school for the deaf just a couple of doors from my home. My youngsters grew up and played with a number of deafened children, some of whom used to come to my home. Notwithstanding the fact that fifty per cent of the

people in the room, even if you were all otologists, will not believe me, you could talk to those children and you would not know that they were deaf. Dr. Newhart will admit that you can't make a lot of otologists believe that.

A good many years ago, in Boston, at the International Congress of Otology, I had the opportunity to hear and see a group of Jonathan Wright's pupils, and I got the same inspiration that you got, doctor, in seeing the children in Dr. Goldstein's school. When you see a deaf individual who has learned to talk, who has learned to lip read sufficiently well to lip read English, German, Italian, French, you know very well that lip reading can be mastered and is a valuable thing.

There isn't any question about the thing. If I can help in forcing individuals who are becoming deaf to learn lip reading, I know that I am doing a very valuable thing.

Dr. Lewis J. Silvers (New York City): Dr. Newhart has rightly emphasized the value of the early use of an electrical aid. I wish to further emphasize the value of early lip reading which should always accompany the selection of a proper electrical ear gadget. Early lip reading will often suffice and frequently replace the more cumbersome apparatus required by those approaching total deafness.

I could bring home to you the great psychological value of hearing aids by citing many cases

benefited by artificially improved hearing. However, I wish to emphasize particularly the primary value of lip reading in early auditory impairment. I have in mind a case, the wife of a fellow practitioner, who, fortunately, began the study of speech reading when she registered the loss of thirty sensation units. At this early stage of auditory impairment she required but little effort to attain perfection in reading spoken words. She is now past sixty years of age, has a loss of more than eighty sensation units, and therefore falls into the fourth class according to Fletcher's grouping. Her skill in lip reading is made manifest by the following remark of her husband, "Not unlike the modern news reel, she can HEAR ALL as long as she can SEE ALL."

Dr. Horace Newhart (Minneapolis), closing discussion: I appreciate the generous discussion of this paper. One further point I would make is that while such work has already been initiated in behalf of the hard of hearing, there remains much to be done in the field of deafness prevention and amelioration. There is a great opportunity for the medical man to aid in helping to solve the problem through manifesting his interest and exercising leadership where it will be much appreciated. If he does not grasp the opportunity there is grave danger that others less well qualified will do so. This is essentially a medical problem and as such should be handled by medical men.

A LETTER OF IMPORTANCE

Amalgamation of Physical Therapy Organizations

TO THE EDITOR:—As a Fellow of both the American Physical Therapy Association and of the American Congress of Physical Therapy, I wish to make an earnest plea for the amalgamation of the two societies. Their aims and activities have been running parallel during recent years and most active men belong to both. The present economic crisis has forced some men and will force many more to take their choice and resign from one or the other organization in order to save paying dues to two similar societies. The official journals of both have a hard struggle to meet their publication costs. There is every reason for a determined and unselfish effort to bring the two bodies into a numerically imposing and financially sound organization.

The forthcoming meeting of the Congress of Physical Therapy in New York offers a suitable opportunity for the officers of the two societies to meet and to discuss their common problems. I am informed that the officers of the Congress have recently decided upon a geographical organization similar to that of other large national medical bodies. Such a plan would enable each active section of our Commonwealth to hold its own regional meeting and still be a coherent part of a large nationwide organization with a common purpose and with real power.

Yours very truly,

Richard Kovács, M.D.

P. S. Duplicate of this letter sent to Dr. Mary L. H. Arnold Snow, Editor-in-Chief, *Physical Therapeutics*.

DIATHERMY AS AN AID IN THE TREATMENT OF GONORRHEAL ENDOCERVICITIS *

ABRAHAM G. FLEISCHMAN, M.D.

DES MOINES, IOWA

This contribution reflects the writer's experience and clinical observation as to the practical utility of diathermy in the treatment of specific endocervicitis. It does not discuss the subject matter of diagnosis, pathology and treatment of the various sequelae that frequently develop.

Approximately eight years ago, I began a study of diathermy to determine its clinical value in the treatment of gonorrheal endocervicitis. Reports given by Corbus and O'Connor, in which they describe beneficial results procured by their use of this agent for the treatment of this condition, stimulated me to carry out further clinical investigations.

I shall enumerate and comment briefly on some of the standard procedures, in addition to diathermy, now being employed. I have found most chemical applications, especially those possessing germicidal qualities, when applied to the cervix topically, to be ineffective. Exceptions are strong solutions of mercurochrome and nitrate of silver, the former being effective when employed with diathermy, the latter when employed for its antiseptic and provocative qualities.

My experience with the actual cautery being limited, I do not feel qualified to comment on it. However, many careful investigators believe that strictures of the cervical canal frequently develop as the result of this mode of treatment.

Surgical procedures, especially those of a plastic character, are not considered the accepted method nowadays. The consensus of opinion condemns surgery as too radical for the cure of this condition in the majority of cases, reserving it only for those cases which have failed to yield to other recognized methods.

Therapeutic Effects and Indications

To the voluminous comments that have been written already about the physiologi-

cal effects of diathermy, I wish to add my personal views. First of all, I disagree with the concept which declares that the therapeutic effects of diathermy are the result of its ability to destroy bacteria. The recent work by Schofield has proven rather conclusively that destruction of bacteria by the elevation of temperature is not so easily produced. He has also demonstrated that the degree of temperature which is capable of destroying bacteria approaches closely to the temperature that will damage the vitality of normal living cells. From my own observations, I am led to believe that the good effects of diathermy comes only from its ability to produce active arterial hyperemia in the area treated. This increase of blood supply augments the defensive agents of the reticulo endothelial system, which play a very important role in combating the invading organisms. It establishes better drainage in the area that receives this localization of heat. Even in those instances where diathermy is carried beyond its physiological limits, as in surgical diathermy, again the chief benefit is that it provides more adequate drainage.

In the acute stages of specific endocervicitis, I heartily agree with Curtis that active treatment is harmful. My experience has taught me that bland irrigations of the vulva with the daily insertion of a mercurochrome or neosilvol suppository are all that is needed in the early stages of the disease.

The application of medical diathermy should begin during the declining or subacute stage of the disease. Under no circumstances should it be given if there is evidence of pelvic cellulitis or of pregnancy.

Medical Diathermy

The method which I shall describe was originated and developed by Doctors Corbus and O'Connor. The technic for acute and subacute stages is as follows:

After placing the patient in the lithotomy

* Read at the Tenth Annual Meeting of the American Congress of Physical Therapy, Omaha, Nebraska, Oct. 8, 1931.

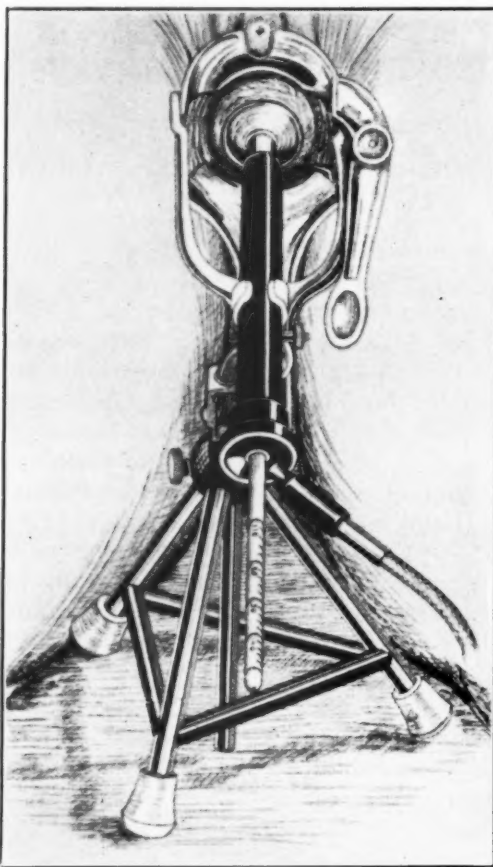


Fig. 1. Method of applying cervical diathermy with Corbus Thermophore, which has Tarbell disc attached to it.

position, the usual Graves' vaginal bivalve speculum is introduced into the vagina. The cervix is properly exposed and the canal is carefully cleansed with an alkaline solution for the purpose of removing the mucus present. The Corbus Thermophore, somewhat modified by the addition of the Tarbell Disc, is gently inserted into the canal, supported in its position by a specially designed tripod stand. The dispersing electrode consists of a double plate, one placed over the suprapubic region and the other below the sacrum. It is connected to the indifferent pole of the machine, and the thermophore to the other pole. With the machine properly set, the current is turned on and gradually increased until the thermometer registers about 114 to 115 degrees F. The temperature is maintained for a period of thirty to forty-five minutes. I have found it necessary at times to interrupt the treatment,

withdraw the thermophore, dry the canal, reinsert the thermophore and continue with the treatment. At the conclusion of the treatment, the cervical canal is again carefully dried out, and topical applications of a four per cent mercurochrome made to the cervix. From four to six treatments are given at seven day intervals. Between treatments, the patient is instructed to take vaginal douches twice daily and to continue with her vaginal suppositories. She is instructed to report to the office for further topical application to the cervix and for bacteriological study of her cervical and vaginal secretions.

Medical and Surgical Diathermy

In the treatment of chronic specific endocervicitis, I have resorted to two procedures.

The first method has been employed for

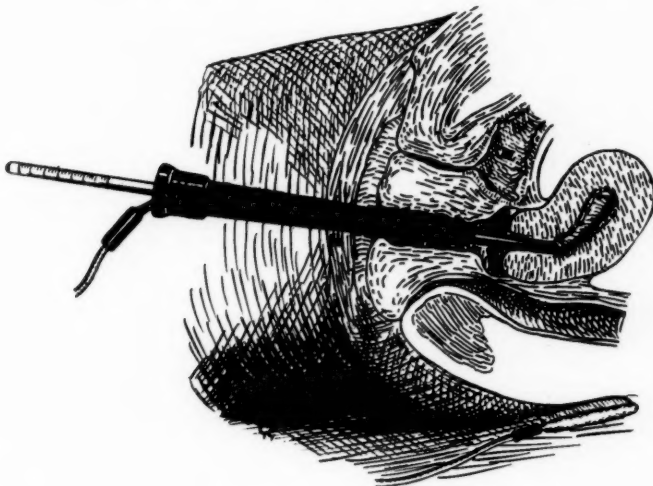


Fig. 2. Sagittal section illustrating the Corbus Thermophore with the Tarbell disc attached.

over a period of six years. It utilizes both medical and surgical diathermy. The cervix is exposed in the usual manner, the canal is carefully cleansed, and a Corbus Thermophore is inserted into it. A treatment of 20 minutes duration is given. (The reason for this brief application of diathermy is to obtain proper cervical dilation preliminary to the application of electrocoagulation.) A large dispersing electrode is then placed on the abdomen. The active electrode consists of an ordinary nasal cautery which has been modified in its design. The part which is to be inserted into the canal has a length of approximately 4 cm., and its diameter is the size of an ordinary darning needle; the remainder of the electrode is insulated with rubber tubing to protect the patient from unnecessary sparkings. The electrode is introduced in the canal up to the internal os and the current is turned on until 250-300 milliamperes is reached. The electrode is then moved very slowly along the canal to the external os, 60 seconds being required for this step. Four or five such strippings are made, each one in a different segment of the canal.

For a few days following this treatment the vaginal discharge becomes exceedingly profuse. The patient is then instructed to report to the office for further observations and treatment. Within a period of ten days the coagulum or slough detaches itself and

is easily removed by gentle swabbing of the canal. Re-epithelization of the canal takes place approximately in about three to four weeks. It is often necessary to repeat this procedure of coagulation two or three times before satisfactory results are procured.

Erosions of the cervix and cystic areas, especially of the nabothian types, are also treated with a somewhat similar electrode. In the cervix areas, the tip of the electrode is brought in contact with the erosion; and in cystic areas, the tip enters into the depth of the cyst. The current is then turned on gradually until the area becomes a grayish white, which indicates that sufficient coagulation has taken place.

Surgical Diathermy

The second method in chronic cases is the result of clinical investigation made by Dr. Ende. He proved to his satisfaction that by eliminating the large, inactive electrode, and making both electrodes active in one instrument, he was able to determine the depth of tissue destruction when a certain amperage was employed for a definite length of time.

About a year ago, I wrote to Dr. Cherry, asking him if he knew of an electrode more suitable for performing coagulation diathermy. He was kind enough to forward me a reply containing an accurate description of

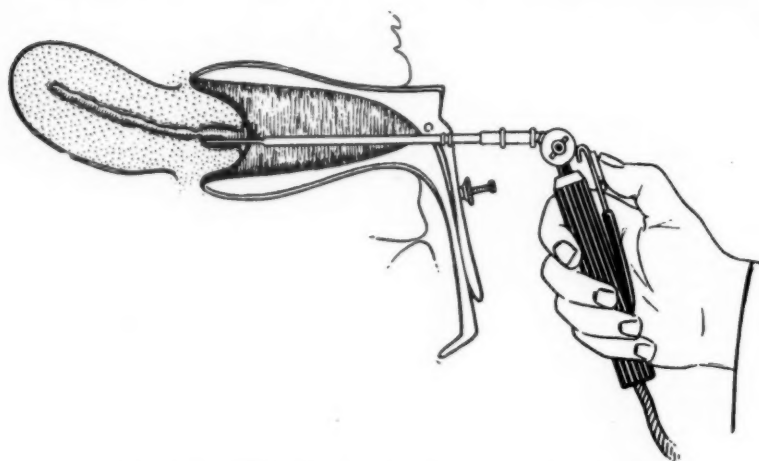


Fig. 3. Method of applying electrocoagulation to the endocervical canal by means of a small active electrode.

a modification of Dr. Ende's electrode, and of its technic of application.

The modified electrode which Dr. Cherry described is constructed with two plates, 2.8 cm. long and 4 mm. wide, placed on opposite sides of a non-conducting material.

rotating the electrode so that contact is made with the lateral surfaces of the canal. With this method, re-epithelization usually takes place earlier. Local treatment and bacteriological studies of the cervical and vaginal secretions are again carried out.

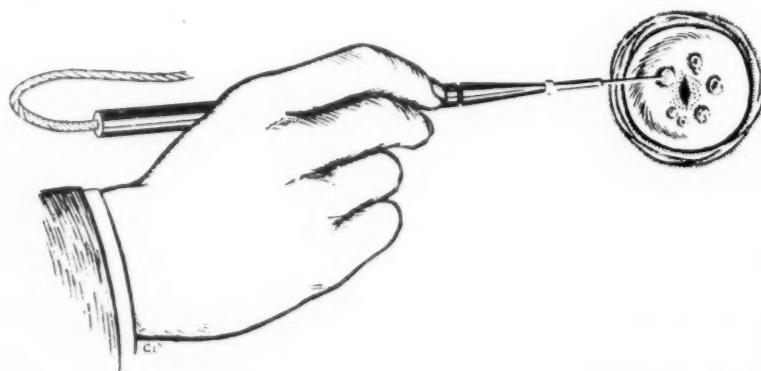


Fig. 4. Method of applying electrocoagulation to the nabothian cysts by means of a specially designed electrode.

The following technic is carried out when using this electrode: Proper machine settings are first made, and the conducting cords attached to the terminals of the machine are brought in contact with each other for the purpose of short circuiting the current. Spark gaps are gradually opened until the meter reads about 2,000 milliamperes. The leads of the cords are then inserted in the terminals in the handle of the electrode. With the cervix exposed in the usual way, the tip of the electrode is inserted in the canal so that the plates are in contact anteriorly and posteriorly. Depress the foot switch and coagulate three seconds,

Conclusion

Clinical results obtained with the methods just described have been exceedingly satisfactory in 70 per cent of the cases. From my observation and experience, I have arrived at the following conclusions:

1. Gonococci, when present, disappear earlier from the cervical canal.
2. The vaginal discharge also loses its purulent characteristics at an early stage.
3. More efficient drainage is established, permitting more accurate topical applications.
4. Strictures of the cervical canal do not occur as a subsequent complication.

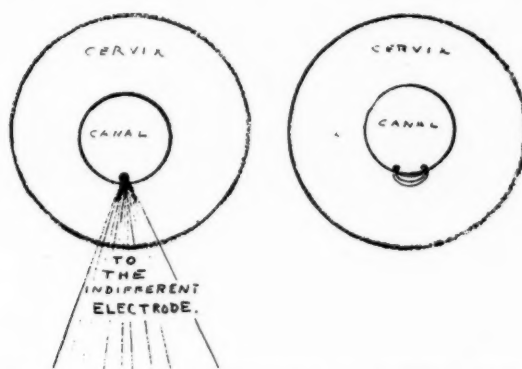


Fig. 5. After Ende, coagulation in cervicitis, using a new electrode. *Am. Jour. Obst. and Gynec.*, July, 1929, reproduced by permission of the author.

5. Recurrences are fewer, and when present invariably respond to additional treatment.

6. In acute cases, the method of applying medical diathermy, as perfected by Corbus and O'Connor, is efficacious.

7. In chronic cases, the procedure of applying surgical diathermy, as perfected by

Ende and Cherry, is the best technic, because it is possible to determine beforehand the exact extent of tissue to be destroyed, and because it is the least painful of the two methods.

From the foregoing findings, I believe that diathermy, both medical and surgical, is not only the *best agent* for the treatment

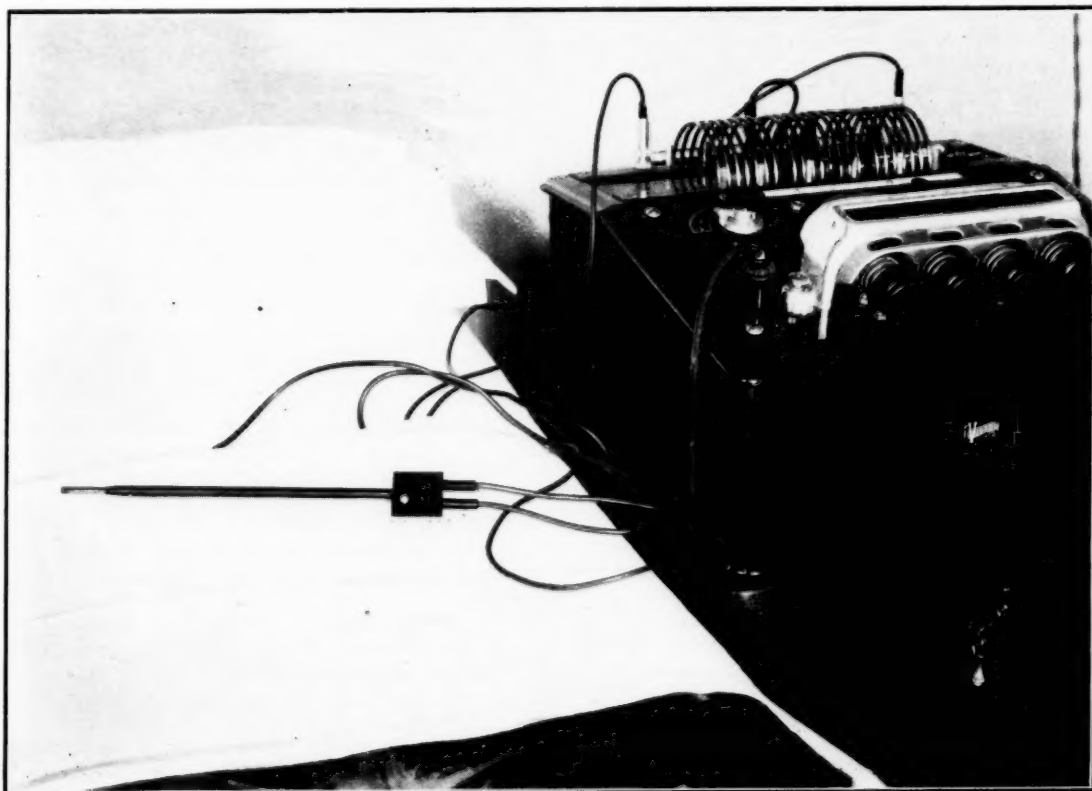


Fig. 6. Illustrates Cherry, Ende, coagulating electrode properly attached to a diathermy unit.

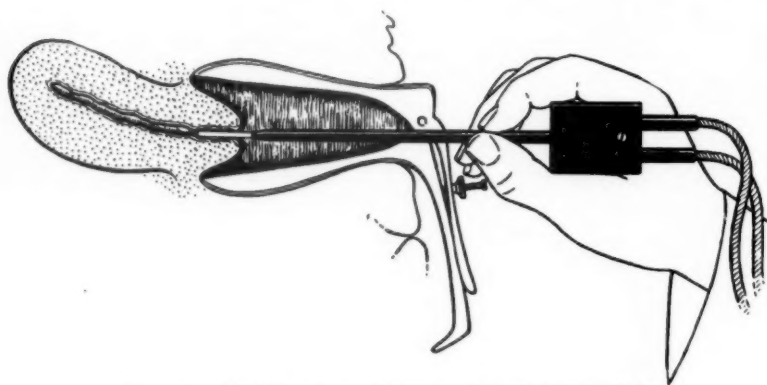


Fig. 7. Method of producing endocervical coagulation by means of the Cherry-Ende cervical electrode.

of specific endocervitis, but it is indeed a *necessary factor* in the cure of this condition.

Bibliography

1. Cherry, Thomas H.: Further Advancement in Gynecological Diathermy. *N. Y. State Jour. Med.*, (November 15) 1930.
2. Cherry, Thomas: *Gynecologic Technic*. 1929.
3. Corbus and O'Connor: *Diathermy in the Treatment of Genito-urinary Diseases*. Minneapolis: Bruce Publishing Company, 1920.
4. Ende, Frank M.: Coagulation Diathermy in Cervicitis, Using a New Electrode, with an Account of the results in 200 Cases. *Am. Jour. Obst. and Gynec.*, (July) 1929.
5. Ground, William E.: Endocervicitis and Erosions, Their Pathology and Treatment. *Physical Therapeutics*, (June) 1931.
6. Hyams, Mortimer N.: High Frequency in the Treatment of Chronic Endocervicitis. *Arch. Phys. Ther., X-Ray, Radium*, (April) 1930.
7. Schofield: Read before Obstetrical Society of Philadelphia, State Meeting, (January 3) 1929.
8. Walker, R. B.: Treatment of Chronic Endocervitis by Surgical Endothermy. *Jour. Med. Soc., N. J.*, (January) 1930.
9. Personal communications from Drs. Cherry and Frank Ende.

Discussion

Dr. William E. Ground (Superior, Wis.): I have used the Ende-Cherry electrode and have had little trouble with it. In this electrode the current goes around from one metal disc to the other, does it not? I consider that coagulation is not of sufficient depth. If we study the anatomy of the cervix we find these glands go down fully a quarter of an inch or more underneath the cervical mucosa. Unless you get down and sterilize all these glands you are not going to cure your cervicitis.

This (indicating the Ende-Cherry electrode) is uniform in size and does not fit the cervix. I have had a flare up (they said it was my fault) in cases where the cervix was a little too large, and there was some fulguration or jumping of sparks. The Ende-Cherry electrode is straight. The cervical canal is rather curved, and the electrodes with which

I have been experimenting with recently I have had made with a gentle curve.

The advantage of having a current come through the cervix seems to me a distinct one. It is a heating of the tissues under the cervix that is efficacious. I consider the Ende-Cherry type more superficial.

I use an ordinary bulb electrode. I have made some myself that fit the upper portion of the cervix and get way up to the upper end of the cervix. Set your machine and begin high up and coagulate an area, then pull it down and coagulate another spot. I have treated cases that way, and I consider the electricity as coming through the cervix and not running around. That was the objection to the Hyam's cutting current. It just shaved off, it seemed to me, the very tops of the glands.

I have another instrument. My inspiration came about from results we got from the cautery in erosions. I pass a little blade up, just as the essayist has described, and linearly cauterize different areas downward—say, three, four or five from the internal os down. The cicatricial contraction resulting from this procedure seems to squeeze out the surrounding infection as it does in the greatly hypertrophied cervix. We produce two lines of coagulation and when it heals it seems to eliminate the infection and the superabundance of tissue in between.

Dr. L. A. Tarbell (New Haven, Conn.): We all have learned to recognize Dr. Fleischman as a critical observer and conservative student in things medical. In regard to electrocoagulation of the cervical canal most of our early experience coincides with the observations made by Dr. Ground. There is no sharp and fast rule to abide by. It seldom in the last analysis depends upon the instrument or the electrode but upon our own experience. Electrocoagulation is a surgical procedure requiring an orientation in surgical technic in the broadest meaning of its definition. Electrodes are improvised by certain men because they come closest to their requirements in the majority of cases. If, however, the situation arises where they do not fit the particular case, the technic must be so adjusted as to circumvent the existing situation. In the hands of experienced operators most any electrode will be sufficient for the purpose. For example, if the electrode is too small for the location it can be ad-

justed to the satisfaction of the existing situation provided the operator is not handicapped by a limited imagination and experience. It is a poor alibi to blame the failure upon the instrument. I should like to have the speaker tell us more about his egg-albumen and chlorotone test for determining coagulation time.

Dr. A. G. Fleischman (closing discussion): The statement Dr. Ground made referable to this electrode is absolutely correct. Unless the electrode fits snugly you will get fulguration and sparking. I only use it in those cases where I have a snug fit in the cervical canal. Where it does fit well, coagulation of a satisfactory nature takes place. In about three days when you get separation of the slough we have measured the depth of the cervical tissue and we have found in the region of the external os that it measured from one and one-half to two millimeters in depth, and towards the internal os from one to one and one-half millimeters. As far as the conductivity of the heat around the os, that is simply a matter of opinion. I am of the opinion that if we concentrate our heat within the area in question we can obtain satisfactory results in most of the cases.

I think there is one thing we lose sight of, that the success of the treatment of an infection is drain-

age. When you get drainage you open the way for successful results.

Dr. Ende is a man of very fine standing in the Gynecological Association, and I know his statements are conservative. With his technic and electrode you can avoid the very thing you have found objectionable in the issue that you have discussed.

This egg-albumen experiment is simply a method of determining how much current is necessary to coagulate an inch of cervical tissue at a depth of two millimeters. Dr. Ende determined that the albumen is somewhat similar in conductivity to the cervical tissue. You place the egg albumen in a centrifuge tube, add chlorotone, agitate it very well, then introduce the Ende electrode and coagulate the liquid for four seconds. When you remove your instrument you should have a coagulum formed between these two metal contact points for a distance of one inch. If you are unable to procure that depth of coagulation in the foregoing length of time, you step up the amperage of your machine until you do procure an inch of coagulation between the zones of these two electrodes. Then you short-circuit the electrodes between some steel wool and note your meter reading. That gives the output of your machine for determining the degree of cervical coagulation at a depth of two millimeters one inch long.

X-Ray Visualization of Arteries in Vivo

An interesting and relatively unexplored diagnostic procedure is that of visualization of arteries *in vivo*. So far, the chief field of usefulness has been in the visualization of the arterial tree of the extremities and that of the brain. Saito, et al. (*Am. Jour. Surg.*, **10**:225, (Nov.), 1930), report their experiences in some detail, in which they use a fine emulsion of iodized oil. As they point out, by this method it is possible to actually determine the condition of the arteries in various vascular disorders of the extremities, to study collateral circulation before and after amputations, etc. The Portuguese surgeon Moniz and his associates (*Lyon Chirurg.*, **28**:273, (June), 1931, and *S. G. O.*, **53**:155, (Aug.), 1931), elaborate on the use of this method for the visualiza-

tion of arteries of the brain. By the intracarotid injection of 25 per cent aqueous solution of sodium iodide, they have been able not only to correctly localize many cerebral tumors, but in some instances to actually diagnose the type, as determined by the degree of vascularity. Undoubtedly this will eventually prove an extremely valuable adjunct to diagnostic neurosurgery. Pearse and Warren (*Ann. Surg.*, **94**:1094, (Dec.), 1931), have recently reported their findings in vascular diseases of the extremities. As a contrast media they have used sodium-moniodomethane-sulphonate, more commonly known as "Skiodan." Although no particular ill effects have been noted from any of the preparations used, the methods are as yet somewhat complicated and require actual exposure of the artery to be injected.



RECENT ADVANCES IN HELIOTHERAPY AS APPLIED IN PULMONARY DISEASES *

A. M. FORSTER, M.D.

Cragmor Sanitarium

COLORADO SPRINGS, COLO.

It would be unprofitable in the light of our present knowledge to discuss heliotherapy from a scientific point of view. While there has been a considerable amount of research in regard to the chemistry and physics of light treatment as well as the physiological effect of light on the human body, nevertheless the positive scientific knowledge of the subject is still very hazy and, after all, the only safe guide in the use of heliotherapy remains clinical judgment and experience.

It is a reflection on the medical profession in this country that heliotherapy has not received proper attention and consideration as a therapeutic measure. In Switzerland, Rollier has for years carried on extensive work, and in his various clinics in Leysanne he has constantly under treatment two or three thousand cases. In France and Germany, heliotherapy is employed extensively, and in England Sir Henry Gauvain has done notable work. In this country, in isolated instances, natural heliotherapy is successfully employed, but the profession at large has shown very little interest in the subject.

The late Dr. Prior, of Buffalo, for many years spent his energy in the effort to call attention to the advantage of heliotherapy, and he established an institution at Perrysburg, near Buffalo, where cases of so-called surgical tuberculosis are treated. His associate, La Grasso, has continued this work, and the Perrysburg institution is the largest of its kind in America. For many years the resorts in the Rocky Mountain region have offered the advantages of heliotherapy to tuberculous patients, but so little has been written on the subject that the profession at large has shown no appreciation of the fact that the Rocky Mountain resorts

have a more constant and satisfactory supply of sunshine than the Alps.

From a clinical point of view it must be recognized that heliotherapy to a large degree has no specific effect on any special disease and that in all probability its greatest good lies in its effect on the general condition of the patient. The probable reason for its particular use in the treatment of tuberculosis lies in the fact that the treatment of tuberculosis consists largely of efforts to improve the general condition of the patient and to place him in better condition to fight his infection. It seems quite obvious that this rule should apply to all other infections, but in surgery and medicine we are constantly seeking direct methods of attack, and are prone to neglect environmental factors which are of vital importance to the patient.

In Florida, Arizona and California, various doctors have recognized the value of heliotherapy in the treatment of sinus diseases, arthritis, and mal-nutrition in children and the aged. Dr. Allen Krause of the desert sanitarium has been most successful in handling cases of this type. In the treatment of tuberculosis, however, throughout the ages, it has been recognized that a wasting, enervating disease needs a stimulating climate in contradistinction to effects obtained by the hot sun of southern resorts which is notably very dangerous. Even in Colorado which is noted for its cool summers, clinical experience teaches us that tuberculous cases are much safer and make more progress in winter than in summer. It is our custom to use the summer sun only early in the morning and late in the afternoon, but during the winter months from 9 or 10 in the morning until 3 or 4 in the afternoon our patients, if properly supervised, can take a considerable dosage of sun. For many years sun treatment has been rec-

* Read at the Tenth Annual Meeting of the American Congress of Physical Therapy, Omaha, Nebraska, October 5, 1931.

commended for the so-called surgical or extra pulmonary as well as pulmonary cases, and in isolated instances, gastro-enterologists, orthopedic surgeons and neurologists have used heliotherapy in the treatment of tuberculous enteritis, bone and joint tuberculosis, and genito-urinary tuberculosis.

Many men with clinical experience recognize that almost invariably where there is manifest extra-pulmonary tuberculosis there is a pulmonary lesion. It is an interesting clinical fact that almost invariably, when an extra-pulmonary lesion develops, the pulmonary lesion quiets down, and not infrequently because of the fact, the pulmonary disease is overlooked.

It is a generally accepted tradition that while heliotherapy is efficacious in extra pulmonary tuberculosis its use is contra-indicated in the pulmonary form of the disease. In our experience at Cragmor we feel that we have found the explanation for this tradition, and the fundamental mistake so often made in heliotherapy is in over-dosage. It is most essential in handling heliotherapy to supervise and study most carefully the individual reaction. The response to sun treatment varies most markedly with each individual, and if a doctor attempts to use this treatment, he must make up his mind to watch his patient most closely and fit the dosage most carefully to the reaction of the patient.

In our experience we have noted on many occasions that patients were unable to take more than a few minutes of sun over a considerable period of time. If this limit is exceeded and unfavorable reactions are induced, the patient can only receive harm from his treatment. If a patient with tuberculosis of the wrist receives an over-dose of sun, he will undoubtedly get a reaction which may be unfavorable, but the damage is not irreparable. However, in cases where pulmonary disease is being treated with heliotherapy and an unfavorable reaction is produced, then harmful effect may continue indefinitely. It is probably for this reason that many authorities have advised against the use of heliotherapy in the treatment of pulmonary tuberculosis. Our experience has taught us that if we use sun treatment with extreme caution in proper dosage and at proper times, it is just as beneficial in the

pulmonary form of the disease as in others. Since, from the clinical point of view, it is well established that the sun does good through its general effect on the patient, we feel that there is no contra-indication to its use in pulmonary disease. We choose for treatment those patients who have already shown their power to resist their toxemia. Patients with acute advancing pulmonary tuberculosis can only expect harm from sun treatment, but as soon as the disease has shown evidence of the development of chronicity, which is the beginning of cure, then carefully supervised heliotherapy almost invariably has a favorable effect on metabolism and is an aid to the patient in developing his resistance to the disease.

Many authorities have advanced the theory that the physiological effect of circulating air on the skin has a definite therapeutic effect, and it is our custom before instituting sun treatment in many instances to have our patients take air baths. In the unfavorable climates where the supply of sun is inconstant, various commercial organizations have exploited lamps of this type, and we feel that the use of these lamps when properly supervised may prove of benefit. As a matter of fact, not infrequently where patients show marked sensitivity to sun treatment, we start their heliotherapy with lamps until their tolerance to the sun is built up to a point where they can safely use natural sun treatment.

In spite of the efforts of the lamp manufacturers to reproduce all the elements in the sun spectrum, it is becoming more and more recognized that natural heliotherapy has advantages over any other form of light treatment.

Discussion

Dr. Brooks D. Good (Colorado Springs, Colo.): I would like to emphasize one point that was mentioned in the paper; that is, careful supervision of the patient. We find very often a great desire on the part of the patient to begin sun treatments. Very often in coming to some western sanatorium they come with the idea of taking sun and light treatment, and they will be over-anxious to start treatment as soon as possible. They often have 102 and 103 temperature, and they will ask, "How soon can I start sun treatment?" That type of patient is the one who receives a great deal of harm from the sun treatment. We wait until the patient is practically free from temperature. Occasionally we start them when they still maintain a range of fever between 99 and 100, but never over that. The extra-

pulmonary type of disease, of course, is where the lung has become chronic. We administer heliotherapy to patients with extra-pulmonary lesions regardless of the temperature, sometimes they show a temperature variation of 102 and 103 even if the lung is chronic, but I think that is where the most harm has been done. I know of one case in particular which at this moment comes to my mind where a visiting doctor went in and said, "I think you had better start sun treatment tomorrow," and went out. The next day the patient who was anxious to start sun treatment went up to the roof and began by taking an hour of sunshine over his whole body. The result was a temperature rise of 102, a rapid pulse, heavy expectoration with streaked sputum, and a development of a typical tuberculous pneumonia. There is no doubt that the sun had caused damage which was practically irreparable. The patient began to show lung excavations and large cavity formation. That is an actual example which has brought into ill repute the matter of giving heliotherapy.

We have found that one can obtain remarkable results by building up the resistance in these chronic cases even after they have shown signs of cavity formation and marked lung involvement. These patients very often have developed a chronicity which enables us to go ahead with further sun exposures.

We use the zoning system of Rollier; that is, exposing the feet the first day for about two minutes. Rollier's technic, I believe, advises five minutes, but we use two minutes and then cover the feet, then two minutes more. The next day we expose the feet for four minutes and to the knees for two, and so on to the waist. Then we irradiate posteriorly again with the same zoning system method, covering ten minutes and exposing two, and increasing two minutes a day.

In that manner we found we can give sun to practically all patients. However, each patient is an individual problem. Sometimes we get the patient to where he is taking as much as thirty minutes' sun exposure and he will develop an over-exposure reaction, such as evidenced by nervousness, probably rapid pulse, may be a little increase in temperature, a little increase in cough. Immediately on observing this we cut the sun treatment down, probably cutting it back to half the time, or even going back to zero and starting again from that point.

Then again, occasionally we find very sensitive patients where we start them on the Alpine light or carbon arc or some other kind of sun lamp, and in that way build up the resistance to the point where we again initiate them back to the heliotherapy, using once more the Rollier method of graduated exposures.

PHYSICAL THERAPY AND TRAUMATIC SURGERY *

J. E. M. THOMSON, A.B., M.D., F.A.C.S.

Chief, Department of Orthopedic Surgery, Bryan Memorial Hospital
Attending Orthopedic Surgeon, Lincoln General Hospital

LINCOLN, NEBRASKA

Of the patients that come within the realm of traumatic surgery, ninety per cent not only have to recover from their injury but also have to recover from an insurance company with whom they themselves have insurance in the form of an accident policy, or from the insurance company with whom the party they hold liable for their injuries has a policy, or from the compensation insurance carrier of their employer. Under such conditions, immediately a serious mental factor as well as a physical factor figures in the ultimate result and recovery from the disability; therefore, our responsibility as traumatic surgeons necessitates a process of mental healing as well as physical healing. Often, during the course of convalescence, legal advisors enter into the care of these cases. They are prone

to be aiders and abettors to physical deficiencies, prolonging disabilities if they see a possibility thereby to prey upon the sympathies of a jury, or create sentiment in favor of their client.

I am told, but I wouldn't try to prove it, nor would I even suggest it outside the realm of these collegiate halls, that medical opinion in regard to extent of disabilities is bought and sold, biased or unbiased, for or against, of a profusely diverse character. The effect of widely divergent appraisal of disabilities by medical experts is demoralizing to our profession as well as the legal appreciation of our opinion and should be discouraged. And yet, exaggeration of disabilities in behalf of an injured patient usually creates a sympathetic reaction upon a court.

But what does all this have to do with physical therapy in its relation to traumatic surgery? Simply this; that immediately on

* Read at the Tenth Annual Meeting of the American Congress of Physical Therapy, Omaha, Nebraska, October 5, 1931.

accepting an injured individual as a patient we not only accept the responsibility of bringing him back to as near normal as possible, but also in many instances we must deal with a group of third parties, and mixing wits with legal talent for or against the patient; or buck opinions with opposing contemporary medical advisors or counselors, make reports, haggle and jockey with adjusters who often seem to have a particular aversion to paying for physical therapy treatments.

Physical therapy when advisedly used has proved a most valuable adjunct in reducing disabilities due to injury, but when carelessly and incorrectly applied not only does it not accomplish its purpose but also brings such treatments into disfavor with insurance adjusters, making it difficult for them to distinguish when, where and how much treatment is of real value in the restoration of injured parts to a normal state.

Rehabilitation work during and after the World War had a tremendous influence in popularizing this branch of therapy. Prior to the war the insurance companies seldom dealt with this factor to a marked degree in settling medical fees connected with the injured, quite naturally, therefore, there arose an aversion to this branch of the healing art in that it was considered something tacked on to the doctor's bill. They often felt that the physical therapy was just an effort to "hook" them a little farther. They would rightfully ask questions whether these treatments made the patient get well quicker, or had an influence in lessening their disability, or whether the doctor was over-zealous in recommending too frequent treatments or extending them over too long a period. Articles have appeared by eminent insurance authorities to the effect that many insurance companies are not convinced that the general run of physical therapy economically serves the injured. The reasons for this attitude are that there are many different types of apparatus—glittering, sparkling, noisy and radiant; that they are applied by any and every one for any and everything—one day in this way and another day in that way, with no standard method of handling specific conditions. However, there are some insurance carriers and industries that are in a position to apply physical therapy within plants and clinics, under their own supervision, that are well aware of the excellent

results organizations and clinics of this character can accomplish.

The medical man in private practice using physical therapy appreciates the fact that a patient is impressed by the spectacular effect of glittering devices in his office, but he must realize that there is much more to treatment than merely exposing the injured member to a lamp or passing an electric current through the tissues. Unless supplemented by active and passive motion, massage and a home program of muscle training, etc., the effect of his electrical apparatus is lost. However, being exceedingly anxious to please the patient who has been under his care for a painful injury with a long and trying convalescence, and who enjoys and is comforted by the treatments, I can understand the temptation to give as many treatments as the "traffic" will stand, particularly when there is a probability that he will have to make a substantial reduction in his fee to effect a financial settlement with an adjuster.

The physical therapist must not only know the mechanics of rehabilitating the traumatized parts, but he must be somewhat of a psychologist with a definite program of mental reconstruction. Many of these injured patients have a grudge against some responsible party or against the universe in general. They are not pursuing their normal life; they are by virtue of their accident kept from their work; they want to "get even"; they feel someone must be made to pay for their misfortune. Often they have the idea that the longer they can keep under treatment, exaggerate their symptoms, the more they will receive in remuneration for their suffering. Bearing in mind that it is our duty to society to get these patients back to normal as soon as possible and make them productive, the periods devoted to physical therapy treatment provide an excellent opportunity to correct their malingering attitude. One may not be particularly gifted in this direction but these qualities can be developed, for it is quite essential to the success of these treatments that constructive or reconstructive mental suggestions contribute their curative effects while lamps are burning and the massage proves soothing.

Physical therapy is too valuable an adjunct to traumatic surgery to come into disrepute through the careless methods of unscrupulous technicians. A careful study of methods and

statistical results by competent committees should form the basis for creating standard and simple specific procedures to be established and recognized as economical and efficacious in the treatment of various types of injuries.

The extensive publication of standard methods for specific injuries would lead to their quite general use, and ultimately valuable statistical material would be available that would aid in determining the relative value of the various types of treatment. Only through the efforts of an organization like this Congress could such a study be made. It would be a thankless, tedious undertaking, but in view of the fact that the literature on this particular phase is so disconcerting and the text books so general in their discussion and the apparatus salesman so persistent and enthusiastic over the benefits derived from the use of the beautiful instruments they have to sell, that it would seem that such a study would be worthwhile and result in an enlightened understanding of just what methods and effects can be depended on to give results in different types of injuries, and an appreciation of the economic value of their application.

During the eleven years that we have had under our supervision a physical therapy department, a great deal has been learned and many changes instituted. We treat only diseases or injuries of the extremities and back. About twenty per cent of our patients come within the realm of traumatic surgery. Ninety-five per cent of all those are expecting some kind of an insurance settlement ultimately. Now these patients constitute sixty-one per cent of those coming to the physical therapy department. From these figures you recognize that just about one-fifth of our total number of patients are insurance cases, and most of them during the course of their treatment have physical therapy.

A thorough study and analysis of these cases has brought us to the conclusions that the fewer bright and shiny, large and noisy, mechanical apparatus we have, and the more intelligent personal handling of the patient, the fewer the number of treatments given, the more effective the treatments and the more satisfactory the results.

The armamentarium of our department has dwindled to diathermy machines, external heating units, hydrotherapy, and such mechanical devices as are needed for active mus-

cle training in the specific cases that come under our care. We have been fortunate in having from the installation of this department the same physiotherapist, one whose personality demands confidence, whose charm is radiant, whose very influence is healing, whose suggestive powers are convincing, and whose system of massage and manipulation is splendid, and under whose guidance the patient keeps busy for hours each day with a very comprehensive exercise and work program.

The biggest factors in successfully treating the convalescent traumatized parts are massage, manipulation, active and passive motion, with perhaps the help of mechanical apparatus to apply heat and water. Last, but not least however, is a line of conversation that promotes a proper mental attitude towards the problems that confront every injured patient.

Discussion

Dr. Robert L. Johnston (Cleveland, Ohio): I was very much impressed with what the doctor said about suggestion through hypnosis. It was my pleasure in 1922 to do some experimenting with suggestion both with and without hypnosis. I was able first to increase the gastric secretion by suggesting under the test meal hypnosis and get the same type of gastric acidity curve as was obtained with the test meal. By giving a test meal you get a certain increase in acidity which will return to normal about an hour and three-fourths or two and one-half hours later. By suggesting the test meal under hypnosis you could produce the same effect. By taking the trained hypnotized subjects and at a later time getting a gastric secretion curve over a period of an hour or more and talking to them about appetizing food, you can produce a secretion curve equivalent to that obtained by a test meal. That physiological basis from the effect of suggestion should be an indication of the benefits which may be derived from suggestion upon encouraging any patient and telling him what he should expect from any therapeutic measure.

If you give the patient aspirin and tell him that it will just relieve the pain and not to expect much benefit from it otherwise, you probably will not get any further benefits from it. If, however, a prescription is given to the patient and he is told that it contains several beneficial therapeutic agents, and that he should expect considerable improvement from it within a short period of time, he will derive a greater benefit than could be expected from the ingredients, which the prescription contains.

If your conscience bothers you a little bit add two or three little things if only some aspirin, and you will find it will produce a hypnotic effect in addition to the analgesic effect.

Dr. N. H. Polmer (New Orleans, La.): The

doctor has cautioned us about two words: The "use" of physical therapy and the "ab-use" of physical therapy in the handling of traumatic cases. Those compensation insurance companies that look kindly toward physical therapy have seen the beneficial results in their own clinics, such as the Aetna clinic under the charge of Dr. Hutchins at Syracuse, and the Employers' Liability clinic at Boston. They have gotten a distaste for physical therapy in traumatic surgery, when they receive a bill from a man who has a patient come back three times a week and put some infrared on his arm or leg for ten minutes, and he tells him, "Come back the following Monday and the next Wednesday and the Friday after that."

Speaking about suggestion, one of the best suggestors I know of in malingerers and in feigned conditions is the faradic current and sinusoidal stimulation. Just before leaving I had a case brought in by a physician from a neighboring city of a girl who fell down a stairs in an industrial plant and developed an immediate paralysis. She had drawn two weeks' compensation. The doctor put her in a splint and a sling. He brought her to the hospital to have her x-rayed and to see if the neurologist could help him diagnose the cause of this paralysis. He stopped at the physical therapy department and asked if we could help him diagnose the nerves

affected, so we put the young lady on the table and told her that we had an electric current that would stimulate the nerves to act, or would stimulate the muscles. While speaking to her physician I applied the active electrode of the faradic current over the belly of the biceps, and an unexpected full movement of the arm was the result. We have had many similar experiences with malingerers.

I am sorry Dr. Coulter isn't here because he has called attention to a number of valuable methods of applying physical therapy, all stressing the simpler measures, heat, massage, active motion, and giving the patient something to do at home. We frequently chart how much our patients can use their extremities. For instance, the chart record is introduced to get abduction, and have the patient climb up with his arm on the wall and make a mark. After a treatment we see if we can get one or two inches more or one or two notches more on the little wall ladder. If we can encourage the patient to extra efforts in therapeutic exercises and encourage him to active exercises of the part under treatment, we will get much better results.

Dr. J. E. M. Thomson (Lincoln, Nebr.), closing discussion: I have nothing else to add and I appreciate greatly the discussion of you, Mr. Chairman, and the other gentlemen.

ELECTROTHERMIC TREATMENT OF ACCESSIBLE MALIGNANT GROWTHS *

WILLIAM H. SCHMIDT, M.D.

PHILADELPHIA

The modern treatment of accessible malignant disease by electrothermic methods has passed the experimental stage and is now established on a firm basis. The results obtained in a large series of cases have been so satisfactory both from cosmetic and curative points of view that there can no longer be any doubt of its superiority over other methods in use at the present time. Its value in a definite field of therapeutics is becoming more evident as technique is improved and as experience increases.

There are definite reasons why electrothermic methods are superior, and a brief analysis will readily demonstrate these principles. In the first place, the method is simple and easy of application. The refinement of control is such that destruction may range from a pin point to lesions of large size, and may be used on such delicate structures as the cornea, or

an epithelioma involving the greater part of the tongue. Blood and lymph channels are not opened, and as a result, there has been marked freedom from recurrence. Further, there is a selective action, due to heat penetration, on the malignant cells beyond the tissue actually destroyed. It has been shown that cancer cells will perish at a lower degree of temperature than normal cells, and so in the treatment of a lesion, the heat which penetrates beyond the area actually destroyed is sufficient to kill the cancer cells, while the normal cells will recover. Lastly, there is a remarkably good cosmetic result following these operations. We rarely have any contracted cicatrix following healing, which takes place rapidly, and the filling in of even large areas of destruction is, at times, very striking. This lack of contracted scar is very important, especially in certain locations, as the eyelids, where contraction would produce more or less deformity and annoyance.

* Read at the New York Physical Therapy Society Seminar, April 15, 1931.

The Various Currents

The currents used are all high-frequency currents, but vary in voltage and amperage. Each has its own particular use and indication, depending on the nature and extent of the growth to be destroyed.

Oudin Currents.—The Oudin current is a high frequency current of relatively high voltage and low amperage, and is used as a mono-polar method. The source of the oudin current is the ordinary high potential coils where the street current, either alternating or direct, is transformed by means of a coil and Leyden jars to a current of high potential and frequency. It is subject to such regulation that it is suitable for most of the work, from the most delicate to lesions of considerable size.

D'Arsonval Current.—The second current used in this work is the d'Arsonval type of circuit, which is a high frequency current of relatively low voltage and very high amperage, and has marked heating properties. This current is obtained from the high potential coils and must be used by the bi-polar method. If this current is applied by means of metal plates of equal size, we will get heating or destruction straight through in parallel lines, being equal at each pole. When one large plate is used, and the other a small one, we have practically the full effect of the current exerted at the small pole. Therefore, in the ordinary applications, we use a large indifferent plate on the back and, as the active pole, we use a needle-point. In this way, the whole effect of the current is exerted at the needle point, and we are thus able to control its action with great precision.

Anesthesia.—In the small growths and most of those on the face a local anesthetic of novocain (procain) 2 per cent and Adrenalin is sufficient to render the operation painless, and as the growth is destroyed at once, there is no danger of spreading the disease by the hypodermic needle. On the eyeball, a topical application of 4 per cent cocain is all that is necessary. In the larger growths on the face, and other parts of the body, epithelioma of the tongue, floor of the mouth or buccal surfaces, it has been found necessary to use a general anesthetic. Cancer in these locations is very malignant and usually infiltrates deeply, so that it is necessary to use very heavy currents and extend the operative field beyond the lesion, in order to get a favorable result. This

is only possible under general anesthesia, and ether is used in these cases.

Care must be taken to remove the ether before applying the current, or it will immediately be set on fire and a serious accident may result. If the patient comes out of the anesthesia before the operation is completed, the operation must be discontinued and the patient again put under the influence of the anesthetic. It is sometimes necessary to repeat this procedure a number of times.

The current itself possesses marked sterilizing properties, so that asepsis is not so important. Nevertheless, a free application of Iodine both before and after the operation is always used. This is especially necessary when a local anesthetic is used.

Technique and After Treatment

The current is applied from a needle held in a suitable handle, and the point of the needle just brushes the tissue, or at times is brought in contact with or occasionally plunged into the tissue a short distance. It is best to have an assistant to turn the current on and off at the command of the operator, and in this way add considerable to the control of the current. In treating malignancy, it is always well to go a little wide of the lesion. First, make a line of destruction around the entire growth. Then another line of destruction divides the growth into two, and then into quarters, after which each quarter is thoroughly destroyed. The length of time of application and the depth to which the current penetrates is entirely a matter of experience, which can only be learned by actual work. The important thing to remember in treating cancer is to overdo rather than to underdo the destructive process. If the entire lesion can not be destroyed at one sitting, it had better be left alone, as the remaining cancer tissue is only stimulated to much more rapid growth.

After thorough destruction of the entire growth the coagulated tissue is removed at once either with a curette or, if the tissue is very hard, by sharp-pointed scissors. There should be no bleeding as the lesion should be destroyed beyond the area actually diseased. After removing this destroyed tissue, the current is again applied to the base and the whole area gone over thoroughly, special attention being paid to the edges, iodine is then applied and the area covered by a dressing of sterile cold cream on gauze.

The after-treatment is important. The patient should be seen frequently and the wound cleansed with peroxide or other antiseptic solution. Cold cream is always used on the gauze after cleansing. After a week or ten days, the base loosens and a slough separates. This should be removed as soon as possible, by gentle measures. A healthy red granulating base will then appear which nature will quickly heal over. The wound must be cleansed daily, iodine used freely, and all crusts prevented from forming. The cold cream dressing accomplishes this as well as preventing the bandage from sticking. The granulations quickly fill up the depression and the skin grows over, leaving a healthy smooth scar. The site of the lesion remains red for a time, but that gradually fades, and in time it is impossible to tell, in most cases, where the lesion has been.

Neoplasms Amenable to Treatment.—Neoplasms amenable to this form of treatment may be divided into two classes, and they differ very much as they fall into one class or the other as to their nature, treatment and the prognosis. The first class is the basal cell epithelioma, in which is included the so-called rodent ulcers. These are very slow of growth, and may exist for years without producing much damage. At times they may take on rapid growth, producing wide-spread destruction and even endanger life. They very seldom metastasize, and cases may exist for ten or fifteen years without glandular involvement or new growth formation in other parts of the body. This rule is not without exception, as we do see cases in which the adjacent glands have become involved, but this usually happens when the growth has taken on very active growth and is producing considerable destruction of tissue. Their malignant nature, however, is very quickly demonstrated, even in the small lesions, in the rapidity with which they recur after incomplete removal.

This class of epithelioma is usually found on the face above and including the upper lip. The most frequent sites are the eyelids, the nose, the temporal region of the face and the ears. It rarely occurs on the body or extremities, and when it does, it usually develops in old leg ulcers or scars due to traumatism or old burns.

The second class is the prickle-cell epithelioma which is much more malignant. They are very quick to involve the glands and may

spread to distant parts, so that it is very important that these cases should be treated in the earliest stages, x-ray should also be directed in massive dose technique to the adjacent glands. If the glands are involved, the treatment of this complication is most important. Epithelioma of this class infiltrates the surrounding tissue to a considerable extent, quickly attaching to adjacent structures, such as the bones, blood vessels and nerves. If they do not receive prompt treatment, they soon pass beyond the help of the surgeon. Nevertheless, much can be done for the cases which from a surgical standpoint are inoperable.

Epitheliomas of this class are found on the lower lip, tongue, buccal surfaces, floor of the mouth, tonsils and larynx. Their treatment presents an entirely different proposition from the first class in that the treatment must be much more radical and the prognosis must be guarded. Many of these cases are left to die when by appropriate treatment a fair hope of success may be anticipated.

A brief discussion of the most frequent sites of epithelioma, with the distinctive points, should prove interesting.

Eyelids.—The lower lids are a frequent site for the development of the basal-cell epithelioma. They are slow in growth, superficial in character, and unless neglected, or improperly treated, may exist for a long time without doing much damage. The Electrothermic method is particularly adapted to the treatment of these cases in that it is not necessary to remove more than the actually diseased tissue, as the heat penetration will kill any cancer cells that may be just beyond the area which appears to be diseased. It has even been found possible to preserve the cartilage in cases where it appeared that the whole lid would have to be removed. The operation is done under local anesthesia with the oudin current. The healing is rapid and results in a perfectly smooth scar without tissue contraction. This last feature is very important in this location, as any contraction produces marked deformity and might necessitate plastic surgery to correct it. In the more advanced cases where the orbit has become involved, it is necessary to use general anesthesia. Here we use the heavier d'Arsonval current, and if needed, the eyeball may be removed by surgical means and the orbital cavity cleansed out down to the bone. After the first application, all the

coagulated tissue should be curetted away and the base thoroughly treated again before we are through. In some cases, it is advisable to strip the periosteum from the bone of the orbit.

Nose.—Epithelioma of the nose is also of the basal-cell type and usually arises from irritation of improperly fitting glasses, or obstructed and infected sebaceous glands. Many epithelioma of the lids and canthi also encroach on the nose to a greater or less extent. On account of the thin skin covering the nose, the bone and cartilage are frequently involved in the process. The treatment follows the same lines, local anesthesia and the milder currents being used. Destruction must be thorough, and the bone and cartilage, if involved, must be destroyed. The currents will destroy bone and cartilage just as rapidly as the flesh. In the advanced cases, where the whole nose, including the bone, is involved, it is best to do the work under general anesthesia and remove the entire nose. Healing is rapid, and sometimes it is remarkable the little deformity that is left. This deformity and others can be disguised by artificial parts made after a method developed in the World War. An artificial nose can be made which is held in place by glasses, and approximates the face so accurately that it is impossible to distinguish at a short distance. This method is very successful and involves the use of sculpture, painting and metallurgy.

Ear.—Epithelioma on the ear occurs usually as the result of a degenerated mole, or begins as a senile keratosis. Another cause is the constant irritation of spectacles which fit over the ears. They are of the basal-cell type, and as a rule are more liable to cause extensive destruction here than in other locations. They are found most frequently on the helix, although any part of the ear may be the seat of a malignant condition. Growth is slow and metastasis rare. They are very favorable cases for the Electrothermic surgery. Under local anesthetic and the mild current, good results are assured in practically all cases. The tragus of the ear is frequently involved as an extension of an epithelioma in the parotid region. Here the disease is usually quite deep, and it is often necessary to use general anesthesia and the heavy currents to remove the tragus, well down the facial side of the auditory canal. Curettement should be done im-

mediately and the base thoroughly treated. The results have been very good in all cases so far treated.

Face and Upper Lip.—The large majority of epithelioma of the basal-cell type are found on the face, including the upper lip and are usually the result of a degenerated mole or a senile keratosis. The early cases are very easily treated under local anesthesia and the desiccation current, and if properly done, should yield uniformly good results. The cosmetic effect is very good, so that it is difficult at times to tell the site of the former lesion even in the cases of fairly large growths. In the large and neglected cases, we must use general anesthesia and the heavy currents, if we hope to get uniformly good results. A frequent site for the large epithelioma is in the temporal region in front of the upper part of the ear. Even when these growths are 3 or 4 inches in diameter, it is possible to entirely eradicate the growth in one treatment and get a good cosmetic result.

Cancer of Lower Lip

Cancer of the lower lip is a very common disease, and is usually found in men. The irritation produced by smoking is by far the commonest cause, and the condition usually starts at the junction of the skin and mucous membrane. It may take the form of a warty growth or an indurated ulceration. This lesion is very different from those considered above and is of the prickle-cell type. It is very rapid in growth and metastasizes to the submental and submaxillary glands at a very early stage. DeCosta in his text book on surgery says: "These glands are always involved within three months of the beginning of the cancer." It therefore becomes apparent at once that early treatment is imperative, if we hope to get the best results. Furthermore, quoting Bloodgood, "the profession must be educated to the danger of irritating and caustic applications to the pre-cancerous lesions, the danger of excising a piece for diagnosis, and the incomplete removal of the diseased tissue."

Two types are recognized: The warty growth is not so malignant, and a large majority can be cured. The ulcerated, infiltrated type is much more serious, and the chance of cure is very much less than the former. They must be treated early and radically.

The surgical operation is often extensive

and includes the removal of all the glands. The Electrothermic method has been very successful in a number of cases, and should only be undertaken with a full realization of the grave nature of the disease and a determination to thoroughly remove all diseased tissue. Our first attention should be directed to the thorough eradication of the local lesion, and in the early cases where the growth is not too extensive and the induration slight, we may employ local anesthesia. The injection should be made wide of the growth and into the healthy tissue. Because of the nature of the lip, it is possible to get a perfect anesthesia even in some fairly large growths. Occasionally it is necessary to use a general anesthetic. The oudin current from the coil is employed, and, beginning wide of the growth on all sides, it is destroyed deeply and thoroughly. Then with a pair of curved scissors, all the destroyed tissue is cut away. There is no bleeding, as the blood vessels are shut off beyond the area actually destroyed. Following this, the current is again applied to the base and the whole area is very thoroughly treated again, special attention being paid to the edges.

When the slough comes away in the course of a week or so, we will have a fair sized raw surface, depending, of course, on the size of the original lesion. This healthy ulceration is dressed with moist cotton, removed frequently, or by gauze coated with cold cream. Healing takes place fairly rapid, and it is surprising to see the amount of filling in that takes place, and oftentimes where we would expect to have considerable deformity, the scar is very slight with practically no interference with the mouth.

Glandular Involvement.—The question of the glands requires careful thought and good judgment. The surgical dictum is to remove all glands in every case. Glands have been found involved in less than three months, even where they were not palpable. On the other hand, we have seen very large glands which were undoubtedly due to septic absorption, as was proven later. It would seem, therefore, that each case must be studied separately, and treated according to the best judgment possible.

X-Ray Treatment

The recent improvement in the technique of the x-ray, employing the Coolidge tube with

the massive dose crossfire method, would seem to justify a certain amount of conservatism in certain selected cases. Therefore, in the early cases, or the less extensive lesions of longer duration where no glands are palpable, x-ray by the massive dose technique and repeated at regular intervals over a sufficient length of time, may be employed to control any possible disease of the glands. If in spite of this treatment the glands should subsequently become enlarged, the safest thing is the use of buried radium. The glands are nature's filters, and if not diseased, it is not necessary to remove them. If they are diseased, the surrounding tissue is also strewn with cancer cells, and surgery can not entirely eradicate it. Each case must be settled on its own merits, but it would seem that if the disease can not be controlled by x-ray and radium, we can not expect much from surgery.

There is a class of patients with whom we have to deal, that suffer not only from glandular enlargement but who also refuses surgical intervention. Here, the only thing left is the use of the x-ray and radium as indicated above.

Cancer of the lower lip is a very important disease and each case requires careful thought and consideration, but if due regard is taken in regard to all factors in each case, there should be a large percentage of favorable results by employing these associated methods.

Cancer of the Tongue

This type of growth is always of one variety, viz., epithelioma. It is without doubt the most dreadful disease with which a physician has to deal. It is most frequent in men, and commonly effects the floor of the mouth and the adjacent glands very early. Because of its malignant nature, it is extremely important that every effort be made to treat the disease in its earliest stages or, if possible, to remove all precancerous lesions. There is no doubt that tobacco is a predisposing cause, and in a large percentage of cases, the victim will be found to be a heavy user of tobacco. Among other predisposing causes are syphilis, rough teeth, badly fitting dental plates, and other forms of chronic irritation. The disease usually starts as an ulcer or warty growth, or at times, as a simple infiltrated mass in the substance of the tongue.

Here, again, attention must be directed to the disastrous habit of applying silver nitrate

and other caustics to lesions on the tongue, for not only does it stimulate the growth, but very valuable time is lost. One explanation given for the rapid extension of the growth is the fact that the constant motion of the tongue muscles forces the cancer cells into the healthy tissue and the glands.

All pre-cancerous lesions should be promptly and thoroughly eradicated. Electrothermic surgery offers by far the best means of destroying and eliminating simple ulcers, leukoplakia, papilloma and other benign growths of the tongue. All these lesions can be removed under local anesthesia with very little inconvenience to the patient. Once the lesion becomes malignant, prompt and thorough treatment is necessary. Surgery has its merits and is amply described in the text-books on the subject; therefore, it is intended here only to present the value of the electrothermic methods. In the first place, the operation is not as formidable as the surgical method, and the patient suffers less shock and no loss of blood. The current immediately seals all blood and lymph channels and the heat penetration devitalizes cancer cells beyond the area actually destroyed. Hence, it is possible to conserve part of the tongue. It also offers a chance to many cases that have been refused operative intervention by the surgeons.

A general anesthetic is administered, the jaws separated by a suitable mouth gag, and the tongue pulled forward by a suture through the tip. The d'Arsonval current is used because we desire deep and wide destruction. The same technique is employed here as elsewhere and the growth is widely destroyed beyond that of the involved tissue. After thorough destruction, the devitalized area is cut away with sharp-pointed scissors and the base thoroughly coagulated over again. In this way, we obtain thorough and complete destruction of the lesion. The pain following the operation is remarkably slight.

After-Treatment.—The after-treatment is very important, and must be closely watched. The mouth must be kept clean by frequent irrigations with antiseptic solutions. This can be done by the patient himself, or if a nurse is employed, she should be instructed to irrigate the mouth every hour. This can best be done with a glass syringe, forcing the fluid under the tongue and around the mouth, and then permitting the fluid to run into a pus

basin held under the chin. In this way, the patient can be kept comfortable. As a rule, there is considerable odor after a few days which persists until the slough has come away. This follows in about one to two weeks. As the slough loosens, it is gently removed piece by piece. No force must be used as this may cause bleeding. In fact, hemorrhage is the only complication we have seen and is liable to occur about the tenth day. It is usually controlled by packing, or by catching the bleeding point. The open area heals over in about six weeks with a smooth non-contracted scar. Bleeding had better be anticipated in the more extensive lesions, and a ligation done on one or both external carotid arteries to guard against this mishap. Of course, when a large part of the tongue is removed, there will result some pulling of the tongue to the side. The glands must be dealt with as described above, and success or failure depends on good judgment.

Cancer of the Floor of the Mouth

Such neoplasm usually starts in the form of a chronic ulcer. This may occur around a diseased tooth, or other source of irritation, or as an extension from the tongue. Its progress is usually rapid, and the glands become involved very early. If it is discovered early while the condition is more or less localized, this method offers a fair chance of success. Even when the bone is involved, it may be attacked, as the current will destroy the bone just as readily as the flesh.

Epithelioma of the Buccal Surfaces.—Usually develop as the result of the irritation of a rough tooth, or on the site of a patch of leukoplakia. It usually takes the form of an ulcer, and may quickly infiltrate the whole cheek and even perforate through to the outside. Another form is the papilloma, which is not as malignant. These cases require thorough and complete destruction, as the tendency to recur is very great even where it would seem that the operation has been radical. The results have been good in a number of cases and the method offers as much or possibly more than anything else known to modern medicine.

Inoperable Cancer

Electrosurgery may be used as a palliative measure in otherwise hopeless cases of cancer. In inoperable cancer of the cervix, it is possible to destroy the ulcerated bleeding mass

and add months of comfort and life to the patient. The bleeding and discharge are usually stopped in one treatment, and it is remarkable how rapidly the patient gains in strength and health. It is possible in this way to add as much as two to three years of comfort to the patient's life, and if the x-ray is used to the limit, it is possible that some of these cases may be held in check for an indefinite period.

In large, ulcerated, fungoid cancer of the breast, it is possible to remove the entire mass and even have the wound heal over as I have seen occur in two cases. In this way, we get rid of the bleeding, discharge and odor, which is of great benefit in these conditions. The change in the patient is quickly apparent in the increased weight and strength, and if there

is not too serious involvement of the axillary glands, the condition may be controlled by the x-rays.

Conclusion

The following points may be emphasized in regard to the advantages connected with the use of electrosurgery in accessible malignant growths.

1. It is the method par-excellence for all precancerous lesions.
2. It is an accurate and successful treatment for all cancer of the basal-cell type.
3. Most cases of prickle-cell carcinoma are amenable to this treatment.
4. There is no limit to the size or extent of the growth.
5. Good judgment in the treatment of the glandular metastasis spells success or failure.

A PLEA FOR THE BETTER UNDERSTANDING OF COLON MECHANICS *

FREDERICK H. MORSE, M.D.

BOSTON, MASS.

The rapidly increasing interest and consequent knowledge of the function of the colon has caused me to approach the subject from a viewpoint too often ignored or not understood. I want to call attention to the importance of the recognition of abnormal angles, all the way from apparently simple over-flexed portions of the colon, to actual acute angles, due to retentive toxic areas that have such an important bearing on longevity.

That the object of my paper can be better visualized, in addition to the colon radiographs which I show you, let us take a minute to anatomically review the colon. The normal colon is a flexible tube, extending from the cecum to the rectum. The caecum end is the larger, diminishing in size from right to left toward the rectum; the sigmoid being the smallest. It has an outer serous coat, a circular muscular coat, and three longitudinal muscular bands, nearly equi-distantly placed about its circumference. The colon is divided into the cecum, starting in the right iliac fossa, having a maximum movement of from two to three inches; the ascending colon is slightly moveable; the hepatic flexure, which

swings to the right forward and under the liver, is partially fixed; the transverse colon extends across the abdomen, upward to the left, under the costal margin to the splenic flexure and is more mobile. The splenic flexure is more constantly fixed than the hepatic flexure; the descending portion is fixed and extends from the splenic flexure to the crest of the illeum; the pelvic colon loops back into the fossa, then forward dipping over the pelvic rim, forming the sigmoid. It extends backward and downward to the recto-sigmoid junction, which is usually opposite to third sacral segment.

The ascending colon and the hepatic flexure in thin subjects, may be accessible to palpation as well as the transverse colon. The splenic flexure is difficult of palpation as it is usually fixed high under the left costal arch. The descending colon can often be outlined by palpation. The cecum seems to function somewhat like the stomach and it is in this right side of the colon that assimilation of certain foods and the absorption of water takes place. The caecum contents are liquid or semi-solid, losing its fluid rapidly and becoming more solid as the sigmoid is approached.

The pelvic colon and sigmoid are subject

* Read at the Tenth Annual Meeting of the American Congress of Physical Therapy, Omaha, Nebraska, October 6, 1931.

to so much variation in length, shape, flexibility, and in its position within the pelvis, that palpation is unreliable so far as any diagnostic value is concerned. Tenderness may be present, but never should this be considered as a reliable guide.

So much for a description of the normal colon, which has no value in therapeutics, and is introduced into the discussion only as a comparison to the abnormal portions that cause disturbances all the way from local dysfunction to actual malignancy.

It is generally understood that gastropnoxis, which usually comes on insidiously, often extending over a period of years, is the primary cause of colon distortion. X-ray operators are in a position to interpret the findings much better than the general practitioner, although knowledge of the subject is increasing rapidly. Jordan, the English roentgenologist and associate of the noted surgeon, Arbuthnot Lane in London, says that a radiograph of the intestinal tract, without the barium enema exposure, is incomplete for diagnosis; and the writer has verified this several thousand times during the last twenty years. While an occasional series of films, taken over a twenty-four hour period, by the oral method, may sometimes have its advantages, I consider it unnecessary in the majority of cases. When one has a radiograph of the stomach alone, one can see that the colon is necessarily depressed, but further than that no definite decision can be made. On the other hand, if one has an x-ray made of the colon alone, with the usual depression of the transverse colon, it is obvious that a ptosed stomach is the cause. The hepatic flexure is the point where the angulation, in the majority of cases, becomes sufficiently acute to cause interference with colon elimination. It is here that actual mechanics of this portion of the colon must be carefully studied and understood, if we are to intelligently prescribe medicine, diet, local treatment, or the combination of therapeutics.

The acuteness of the hepatic angulation determines the amount of distention and prolongation of the caecum; also the presence or absence of an incompetent ileocecal valve. The importance of knowing whether or not an incompetency is present, cannot be overestimated, and its presence can only be determined by a radiograph by barium enema, with a properly prepared bowel.

In the treatment of a chronically infected caecum, a colonic irrigation by the usual method, where much putrefaction is present, is very often a harmful procedure. The writer, who has two colonic irrigation outfits, in every day use, will not allow the caecum flushing process on a new patient, until he has personally visualized a colon radiograph of the subject. The forcing of putrefactive caecum bacteria back into the ilium, with its greater absorbent power, is to be avoided. Here again is where colon mechanics must be carefully considered before instituting any form of treatment.

The splenic flexure is usually more or less angulated when the above conditions exist, but it is usually of minor importance because the peristalsis of the transverse colon, and the downward gradient of the descending portion, prevents retention of bowel contents at that point.

Chronic Diarrhoea and Constipation

I have repeatedly observed that a chronic or recurrent case of colitis, described by patients as "looseness of the bowels" can almost always be traced to a previous constipation. Dr. Anthony Bassler, in his recent excellent book on "Intestinal Toxemia," states that the main cause of colitis is a secondary result of long standing and neglected intestinal toxemia. From the mouth to the anus, nature has endowed the whole intestinal tract with curves, to minimize all possible friction, during the passage of contents. If the original plan is interfered with, sacs, pockets, etc., are formed and normal, protective intestinal flora are changed to putrefactive bacteria, to be followed by sequela under innumerable names, from gas pains to actual pathology.

In the pelvic colon and sigmoid, because of the frequent existence of very marked prolongation and distention, and consequent impaction (the most prolific cause of malignancy in the intestinal tract) is where ulceration, diverticulitis, and colitis have their habitat. The writer's long experience in this study of the colon, by x-ray, is convinced that pelvic colon dysfunction and disease, are primarily caused by caecum toxemia, which is too often designated by the incomplete diagnosis, namely, constipation.

Constipation, like arthritis or a cough, being only a symptom, is caused primarily by more or less abrupt bends, which interfere

with normal peristalsis, which in turn impairs local nutrition and cause granular degeneration in the adjacent bowel tissue. The chronicity and age of the patient will determine the results of an effort for relief or cure.

Spasticity of the Digestive Tract

At the mucus orifices — larynx, esophagus, urethra and anus — which comes under the head of voluntary muscles, are subject, when sufficient irritation is present, to spasm, and the cause is usually easily determined.

It is reasonable to believe that some cause prevails that attributes the above symptom (usually painful) to nature's attempt to get rid of something in the disturbed area, rather than attribute it to some neurosis, which explains nothing. It is at the sharply angulated hepatic flexures and elongated and distorted sigmoids and the pelvic colon, where colon spasticity is most frequent. The only comment is to find out, by barium enema radiograph, how much the colon is out of alignment so to speak, before you depend too much on belladonna and other anti-spasmodics.

Several prominent writers, including physiologists, speak of redundant colons as congenital. It does not seem reasonable that the Almighty started us wrong at birth, only in rare instances. Someone has said, "When we begin to live, we commence to die." In other words, wrong feeding may start in the cradle and continue until symptoms arise that call for a halt, and investigations reveal an interference with elimination, while faulty ingestion has been going on.

Spasticity of the stomach and bowels are often flippantly spoken of as neuralgia, and neurasthenia is meaninglessly mentioned in this connection.

If the foregoing conclusions and deductions have sufficient element of truth as to be considered with due seriousness, then they should be recognized as important in therapeutics. A mechanical defect demands mechanical treatment to assist restoration, as near as possible, to normalcy. The principle that would apply to voluntary muscles, when impaired in function, would be indicated in colon impaired areas, as that organ must be considered as a hollow muscle. Modern invention, allowing deep penetration of mechanical stimulation, because of diminished skin resistance, has solved the problem. The results, of course, depend upon careful diagnosis, having respect

for necessary surgery and proper technic. The prognosis must always be guided by age, the advanced degree of functional impairment at the hepatic and sigmoid flexures and the willingness of the patient to co-operate.

Physical measures — diathermy, galvanism, etc., may be used to improve nutrition. Sine wave for muscular rejuvenation offers therapeutics possibilities. The mechanism of the colon must ever be in mind; if ignored, the essentials of colon therapeutics are overlooked.

It is generally conceded by the profession who understand the subject, and more often recognized by the roentgenologist, that colons having sacculated parts may easily become or threaten to become, toxic areas, from which septic dissemination may cause eighty per cent of the ailments of the human body. The x-ray is here our best guide to help us interpret the many problems associated with the spastic bowel.

Cecum and sigmoid infection, which are the products, indirectly, of the abnormal mechanical contour of the colon, being so bent and distorted as to cause sacs, pockets, etc., of course demand other measures than mechanical treatment as above mentioned.

When we consider that conditions recognized and spoken of as if the very name of the symptom implied satisfied diagnosis, we have no real basis for therapeutics. Arterial hypertension, and the more advanced sclerosis, angina pectoris, anemia, acidosis, endocarditis, myocarditis, the variety of painful conditions which may come under the head of myositis or fibrositis, obesity, and rheumatism can usually be traced to intestinal toxemia; or to be more definite, the sacs or pockets from which the putrefactive bacteria is disseminated must also be discovered.

In conclusion, a medical term as applied to a functional disorder or an actual pathology is no complete guide for treatment, and nowhere does this apply more emphatically than in the colon. With the great distribution of x-ray apparatus throughout the country there should be no excuse for not ascertaining the factors producing the loss of the normal mechanical arrangement of the colon.

It is to be hoped that my hearers are not getting the impression that other well known measure for the relief of colon toxemia are to be ignored, but I have endeavored to stress the main feature, namely, the real cause of

infection, the elimination of which is the real object of colon therapeutics.

711 Boylston Street.

Discussion

Dr. J. W. Wiltsie, (Binghampton, N. Y.): It has been a great pleasure to listen to this excellent paper. His description of the anatomy and function of the normal colon is correct in every detail. Nor has he exaggerated the importance of abnormal angles and localized areas of infection proximal to these. I should, however, like to add a little to what the speaker has given us, and I am afraid I shall have to question one or two statements.

I question the statement that it is generally understood that the primary cause of colon distortion is gastropstosis. In all my reading, which has been extensive on this subject, I do not recall having seen this belief expressed. Visceroptosis is a much involved subject which cannot be gone into here. In the majority of cases, gastropstosis may be but part of a general visceroptosis resulting from toxic, atonic, morphologic or other causes. I doubt if gastropstosis as a primary cause has anything to do with colon distortion. It is much more likely that both are the result of some common cause. However, if the colon functions normally as it does in many of these cases, our interest in it is purely academic. But when function becomes disordered, then we are interested.

The colon from the cecum to rectum is a unit. The gradient principle of Alvarez if operative at all, is decidedly overshadowed by the principle of the mechanical lever. All the factors essential to the operation of this principle are present in the colon. The splenic flexure is the fulcrum. The sigmoid and the taenia coli having firm anchorage at the recto-sigmoid juncture and automatically cause the distal segment to become the power arm. The more capacious, less muscular, freely movable cecum, together with the ascending and transverse colon are the weight arm. The fecal contents of the cecum, ever renewed, is the weight to be lifted. There are of course other factors to be considered but this flexible biological mechanism is by far the most important. Upset the ordered working of this mechanism by adhesions of the cecum, excessive load, or atony of the right colon from chronic intestinal toxemia and there is disordered function of the whole unit with all its possibilities, resulting ultimately in stretching and ptosis of the transverse colon; and redundancy and spasticity in the sigmoid as it strives to overcome these handicaps. The power arm develops to meet the demands of the weight arm. In other words the two arms of the lever must balance. The force must equal the load. In the heart we call this compensation. Unheeded and uncorrected, the end result is decompensation, disease and chronic invalidism.

Those of us who use and understand the Schellberg method of colonic therapy have learned to take advantage of the physiological

phases of the activity of the colon in introducing the colon tube as far as the cecum. Thus by direct application of hot medicated solutions into the weight arm we get results that can be obtained in no other way. We believe that expert retrograde manipulation is to be preferred to forced retrograde action. The neuro-muscular mechanism is not disturbed, there is no forcing of physiological sphincters and no stretching of any segment of the colon. Toxic material from the power arm is not forced back into the weight arm for further absorption of toxins. On the contrary the hot medicated solution in the cecum stimulates contractions in normal sequence and empties the colon from above down. Free drainage is established, toxemia relieved, tone improved and compensation restored.

Doctor Morse states that he never permits a colon irrigator of a new patient until he has personally visualized a colon radiograph of that patient. One would infer that this is done more as a precautionary measure than as a means of diagnosis. Personally I do not feel that this is necessary, for there is no danger whatever to the patient when the tube is intelligently used. To me it is an examining finger. On the other hand I frequently call for a complete gastrointestinal series plus a barium enema radiograph as a diagnostic measure, but not as a rule until I have studied my case for a week or more clinically and given four or five colon treatments. Diagnosis of colon stasis must be made first of all clinically, then biologically. The value of x-ray lies in ruling out or verifying such complications as carcinoma, constricting adhesions, tuberculosis, diverticulitis, marked ptosis, etc., and is not invoked as a rule until some limiting complication is suspected.

Dr. J. Severy Hibben (Pasadena, Cal.): A point that Dr. Morse brings out, namely, that we should make x-ray pictures of the colon before we do any therapy on the colon, is indeed very important. In the presence of diverticulum there is a danger of rupture of this pathologic saculation, and I speak of this from personal experience. I had a patient that received colonic treatment from my technician. Unknown to any of us she had a diverticulum at the rectosigmoid junction, and shortly after the treatment was concluded the nurse called me in and said that the patient had fainted. We found her in profound shock. Since that experience I have always made it a point to have the colon x-rayed before instituting any treatment, whatsoever. This experience also impressed me with the fact that colonic treatment requires the supervision of a medical man who has made it a point to understand the normal function as well as the abnormal deviations of the colon. It is to be regretted that a great deal of this work is being mishandled by private technicians and borderline practitioners equally as incompetent. It is also to be regretted that some manufacturers have encouraged the exploitation of this work among these type of people. Avarice and immediate profits has been the great handicap for the scientific exploitation of colon therapy. We face here a depressing state

of affairs which is in need of a wholesale and drastic housecleaning.

Dr. O. M. Moore (York, Nebraska): Fame is a very ephemeral thing. About twelve or fifteen years ago some Chicago surgeon started us out on focal infection. I have misplaced his name. (It is perhaps Billings or Murphy.) We were hunting infection in the teeth, accessory sinuses in the tonsils of younger people. Finally we arrived at the abdomen and now we are down in the pelvis and hunting up the pelvis tonsil. On account of the prevalence of autointoxication or acidosis, I think, in many of our cases, that is the cause of stasis. I want to say that the mechanism of the colon describes that, but no one emphasized it. That part of the colon which Wiltsie called the weight arm is where the trouble is. When that cecum becomes loaded with fecal matter and cannot get past the hepatic flexure, it opens the cecal valve, and from the cesspool of the colon it goes back into the intestine and can't be absorbed. We have observed that many times, just as Dr. Morse has exhibited so plainly.

Dr. C. L. Rowell (Chicago, Ill.): Any comment on such an excellent paper as you have just heard must necessarily be in the nature of an addition, rather than a discussion. The subject of colon mechanics is thoroughly covered, but the factor which I believe to be of the utmost importance in the renovation of the large bowel, namely irrigation, is omitted from this interesting paper. Someone may say, "Oh well, he's an irrigator, it's natural for him to stress that angle." That is only partly true, as I have used diathermy and the sine wave as a routine in my colon cases, and dietetics, vaccines, drugs and other therapeutic measures where they were indicated. So it can hardly be said that I have a "one-track mind" on the subject.

We need hold no brief for colonic therapy, even though it has been held in contempt and pooh-poohed by many members of the profession. When such nationally known men as Dr. Morse, Dr. Osgood of Boston, Dr. Max Hubeny of Chicago, Dr. Sam Brown of New York, and many others of like reputation, put their stamp of approval upon it, it takes it out of the class of remedies of doubtful value.

I firmly believe that most of the condemnation of colonic irrigation has been caused by a failure to get satisfactory results from the many haphazard, hit-or-miss methods that have been used all over the country for years. One of our leading roentgenologists turns thumbs down on colonic irrigation because he observed, over a period of years, that dilation and atony of the gut seemed to follow the administration of repeated enemas. I agree with him thoroughly. However, it is a far cry from an enema to a catheterization of the right colon, which is what I mean when I refer to a "colonic irrigation."

Three years ago in Chicago I read a paper on the subject which started a storm of discussion that was almost violent in its intensity. If there

are present any advocates of such silly ideas as using 30 to 40 gallons of water in irrigating a colon, or cleaning it by having the patient take large quantities of water by mouth, I fully expect they will be jumping to their feet to take up our time and delay the more intelligent discussions.

I do not intend to take up valuable time explaining why an irrigation in which a tube is not passed at least around the splenic flexure, cannot possibly accomplish the operator's purpose anywhere near as well as a treatment that is properly given. That will be evident to anyone with a rudimentary knowledge of the anatomy and physiology of the bowel who will take the trouble to inquire about it from someone who is informed on the subject. And most certainly our time cannot be wasted by any such antiquated idea as that a tube cannot be passed beyond the rectosigmoid junction. Dr. Hubeny has in his office several x-ray films that cannot be questioned.

In applying therapy to the colon, we have two objects, each of which is essential in obtaining maximum and permanent results.

1. To change the chemistry and bacteriology of the gut, which in turn will tend to eliminate infections and remove the "toxic areas" mentioned by Dr. Morse.

2. To restore the bowel to its proper tone in its several segments, using either diathermy or the sine wave for the purpose, as either may be indicated. This will tend to straighten out angulations, decrease the diameter of dilated sections, correct incompetency of the ilio-cecal valve, restore activity, and thus overcome the stasis that is the cause of so many toxemias.

Irrigations, properly given, will accomplish the first object, especially if errors in diet are corrected. Autogenous vaccines are a great aid in some cases in overcoming infections. This is particularly true in chronic skin diseases and in arthritis.

Electrotherapy will bring about the second object, if applied properly and over a long enough period. Neither of these alone will do the whole job, so why neglect either of them?

The best method of applying the sine wave, or the galvanic current, to the colon, and one that has given me better results than any other, is made through the cecum tube by means of a salt solution, which is run into the right colon and forms the active electrode. A 4"x6" asbestos pad placed on the back, just below the right scapula, is the indifferent electrode, and the current is thus passed from the *inside* of the gut to the patient's back, causing rhythmical contractions and relaxations of all the muscles lying in the path of the current. It is hard to conceive of the muscles in the bowel wall *not* reacting to such a stimulation. At any rate, it gets results. However, it can readily be seen that it cannot be used in any of the make-shift technics whereby the irrigation is applied to the lower bowel which, after all, is no different than an ordinary enema, which can be taken by the patient at home.

PHYSICAL THERAPY OFFICE MEASURES HELPFUL IN IRITIS *

ELLIS G. LINN, M.D.

DES MOINES, IOWA

Few ailments coming to us for relief, cause more distress or produce more wreckage to the organ involved than do severe attacks of iritis.

Nor is it always easy when first seen to determine that it is an iritis and not a glaucoma or other ailment that is developing. The circumcorneal injection may be so slight as almost to escape detection. There may be little complaint of local distress. The relative dullness of the iris may be but slightly observable and at the very outset dilatation with homatropin or euphthalmin-cocain may be but very slightly tardy.

It is, however, just at these first calls that greatest help may result from prompt mydriasis and adjuvant measures.

Then, too, it is necessary that the etiology be determined, since treatment for a tuberculous iritis would be essentially not the treatment for a traumatic or a luetic attack. There is little excuse for mistaking an iritis for any form of conjunctivitis, and still, that error has been made at a terrible cost to many patients.

I have seen a man physically athletic, with his eye-sight wrecked, because, for several days his eyes were treated for pink eye with only boric solution, while a severe iritis rendered him permanently unable to carry on his business.

I have seen a woman of nearly sixty, being treated for iritis, while a destructive glaucoma was playing havoc with an otherwise normal eye.

These misfortunes then, lead me to point out some of the evidences distinguishing the one disease from others, and to suggest some more recent measures for relief.

In presenting this paper I am assuming that there are in this group a considerable proportion of physicians who are not specialists. Acting on this assumption I am setting out differentiating symptoms, only that you who are busy in general work or other special

practice, may find it easier to safeguard useful eyes.

In an active iritis, the striations or markings of the iris are dull or indistinct or brownish or a dirty grey.

In glaucoma, conjunctivitis or keratitis, the iris marking as compared with its fellow, remains distinct, unless the iris may become involved. Irregular thickening of the iris tissue and the vessel walls, with minute hemorrhages, are observable, with some round cell infiltration and exudate into the anterior chamber in fairly severe iritis, none of which are a part of glaucoma or conjunctivitis.

In iritis there is dimming or loss of vision early. In conjunctivitis, vision remains unimpaired and in non-inflammatory glaucoma, vision tardily recedes.

In iritis, although tearing may be abundant, there is no sticking together of the lids in the morning, no pus, no pathological secretions.

In glaucoma and non-ulcerative keratitis, lachrymation will be increased, in ulcerative keratitis it will be quite free and may be muco-purulent. In conjunctivitis it will usually be abundant and may be purulent.

In iritis the cornea is more than normally sensitive. In conjunctivitis it is somewhat hypersensitive, while in glaucoma the corneal sensitiveness is markedly dulled.

In iritis the deep circumcorneal injection is fairly distinctive, while the conjunctiva is little if at all abnormal. A diffuse injection of the conjunctival vessels is characteristic of a conjunctivitis and is likewise present to greater or less degree in keratitis and slightly so in glaucoma.

Deep ocular pain, worse at night and extending to the brow or temple is strong evidence of an iritis. Pain may be absent or severe in keratitis; a feeling of soreness or roughness or of dirt in the eye evidences conjunctivitis, while the pain of glaucoma may be negligible, or extreme, if the attack be inflammatory.

The pupil has much to do with telling the story. In iritis the pupil is small and, un-

* Read at the Tenth Annual Meeting of the American Congress of Physical Therapy, Omaha, Nebraska, Oct. 5, 1931.

der a loupe, or with a red reflex, shows an uncertain margin, rough or even ragged and sluggish, if not altogether immobile to light reaction. In glaucoma the pupil is dilated, the margin clean and it does not contract under light, while in conjunctivitis the margin is free and the size varies with light falling upon it.

The posterior surface of the iris, particularly the pupillary margin, in iritis, early throws out a plastic exudate, forming irregular attachments to the anterior capsule of the lens and these posterior synechia rapidly increase in number and extent.

In conjunctivitis, synechia are not found and save the inflammatory type, the same holds in glaucoma.

In conjunctivitis, the cornea remains clear, and the contents of the eye unimpaired. In glaucoma, the cornea may become steamy and in iritis, to the fairly frequent haziness of the cornea is added the cloudiness of the eye fluids from the exudate thrown down. It may not be amiss to state that both the posterior and the anterior surface of the lens capsule may be enveloped in exudate in severe iritis.

Cocaine-euphalmín drops will quickly dilate the pupil in conjunctivitis; they will probably produce an additional, transient increase in the dilatation in glaucoma and they will, unless an annular synechia be present, more or less tardily produce, in iritis, a dilatation in all segments not held down by adhesions to the lens capsule. This dilatation unmistakably evidences any adhesions, which readily show as saw tooth projections about the irregularly dilated pupil.

Severe photophobia is always present in iritis. In conjunctivitis it is slightly annoying, in glaucoma it seldom causes much discomfort.

Pressure on the closed lids about the corneoscleral margin causes pain, mild or severe in ratio to the severity of the iritis, but always unmistakable pain. In non-inflammatory glaucoma there is often little or no pain and in conjunctivitis soreness but no real pain.

An evident unevenness in the thickness of the iris, due to localized swelling of the iris tissue and deposit of exudate beneath the most involved segments, is present only in iritis. Deposits, pin point in size or larger and very frequently triangular in arrangement on the

posterior surface of the cornea, lower segment, points directly to iris involvement. In the more severe forms and well developed attacks of iritis, any physician should quickly make an accurate diagnosis and further reference to diagnosis is omitted from this paper.

All this is, of course, presented with the understanding that the statements are somewhat flexible and many modifications will be met. Bearing in mind these several differentiating symptoms, we may bring before you measures that have been of service in affording relief and in helping to cure.

There is no form of iritis wherein a mydriatic is not indicated. There is no form of iritis in which a mydriatic fails to benefit. There is, of course, a very evident danger in continued mydriases in elderly people. A severe glaucoma resulting from too prolonged mydriasis may precipitate as much harm as would have resulted from the iritis. In all these possibilities, the physician will have occasion to exercise his best judgment and in all this there is nothing that is new.

Just less than fifty per cent of all cases of iritis are luetic. Every measure that is helpful to a luetic condition elsewhere, is also helpful in an iritis of that type and every helpful measure is in every case to be employed.

In tuberculous iritis, a like statement holds. Every measure, helpful in a general way in tuberculous systemic conditions, will be helpful in tuberculous iritis, and such helpful measures are not to be neglected. No physical therapy measures have ever been employed by the writer in iritis due to tuberculosis.

It is pointed out by De Schweinitz that iritis is probably never primary. It may be a sequel to any one of a dozen conditions commonly met with, the most common being syphilitic, rheumatic or as T. H. Butler expresses it, auto-toxic, gonorrhoeal, traumatic and sympathetic. From whichever of these numerous causes the attack results, there is local precipitation of toxic substances, impaired metabolism, oedema of the structures, and accumulation of exudates, with capillary overloading and sluggishness.

This circulation disturbance in iritis, is early evidenced as a pericorneal injection, showing a local congestion or sluggishness or circulation impairment or damming back of

inflammatory exudates, almost from its incipency. The early contraction of the pupil is due in part to hyperemia of the iris and partly to the peripheral nerve irritation because of blood stasis, resulting practically in an iris spasm. At just this early stage, there is also first observed the swelling and apparent haziness of the iris surface with filling in of the lymph spaces and precipitation of plastic exudate about and behind the pupil margin, evidencing a break down in the flush-out system of this delicate tissue.

A measurement of the seriousness already resulting, may be had in the amount of cloudiness found in the eye media upon examination. A very marked clouding indicates an extension to the ciliary body. Likewise immobility of the pupil, or tardiness in the pupillary reaction is among the very early and very accurate measurements of iris impairment.

In addition then to any or all the measures generally recognized as being helpful in iritis, or where a keratitis has resulted in involvement of the iris, localized diathermy and infrared therapy and, where corneal ulcers are present, water cooled irradiation through a quartz rod, have proven of positive value, sufficient to warrant their general employment.

There is probably no other local measure the influence of which is so deeply penetrating as is that of diathermy. The effect of an accelerated blood intake, together with an equally accentuated blood drainage, kept within physiological bounds and somewhat prolonged, has always been regarded as a reinforcement in Nature's battle line for recovery. Nothing adds more to the push towards metabolic betterment than a vigorous, sustained, physiological blood stream; and nothing aids more effectively in the removal of a localized pathology than is afforded in an ample unimpeded blood supply. Such a condition of betterment can be helpfully influenced by carefully applied electrodes properly shaped and the passing of a diathermy current.

Anyone whose experience in the application of this current has extended to any considerable number of cases of iritis, will support the statement that it has a soothing, satisfying, bettering influence as expressed by

the patient, and that it is permanently helpful as evidenced by the relief from pain, the passing of the soreness, the breaking down of the synechia and the more gratifying improvement as compared with like cases where this current has not been used. Treatments are delivered through shaped, block tin electrodes, the indifferent electrode at the back of the neck, the amperage running twenty minutes.

As stated before, all other safe and sane measures and medication, generally recognized as being helpful, are employed.

Detailed reports of a series of cases treated are omitted because the paper has already reached too great length. It may be stated, however, that to the writer, there is no longer any doubt of the deep, helpful and lasting influence of properly applied diathermy in iritis.

The writer has seen cases improve definitely more rapidly, after application of the diathermy influence. He is convinced that mydriasis is more quickly obtained and more nearly to the maximum, where this current is used. He feels the statement may be safely and accurately made that synechia break down more readily with the help of daily or twice daily diathermy treatments. He has seen very definite evidence of this result in two cases where by chance the synechia yielded while the patient was undergoing treatment.

Of the infrared light application, some patients have expressed themselves as satisfied that it is at least palliative and very probably permanently helpful. The face is, of course, protected by a towel through which an opening is made permitting the desired area to be irradiated.

In all corneal ulcers, whether tending toward iritis or not, the ultraviolet rays from a water-cooled lamp are delivered through a one-fourth inch quartz rod at such an angle that the rays shall not fall upon the essential areas of the retina, the ulcer being bathed in the rays from twenty to thirty seconds. I have never attempted to irradiate the iris, although in tuberculous iritis, such treatment presents a reasonable appeal.

714 Equitable Building.

ARCHIVES of PHYSICAL THERAPY, X-RAY, RADIUM

OFFICIAL PUBLICATION AMERICAN CONGRESS OF PHYSICAL THERAPY

Editor: DISRAELI KOBAK, M.D., CHICAGO

EDITORIAL BOARD

MEDICINE—NORMAN E. TITUS, M.D., *New York*; F. H. EWERHARDT, M.D., *St. Louis*; E. N. KIME, M.D., *Indianapolis*; CURRAN POPE, M.D., *Louisville*; J. C. ELSOM, M.D., *Madison*; EDGAR A. MAYER, M.D., *Saranac Lake*; CHAS. E. STEWART, M.D., *Battle Creek*; HARRY EATON STEWART, M.D., *New Haven*; J. U. GIESEY, M.D., *Salt Lake City*; BENJAMIN GOLDBERG, M.D., *Chicago*.

SURGERY—WILLIAM L. CLARK, M.D., *Philadelphia*; GUSTAV KOLISCHER, M.D., *Chicago*; JOHN S. COULTER, M.D., *Chicago*; A. D. WILLMOTH, M.D., *Louisville*; F. H. WALKE, M.D., *Shreveport*.

EYE, EAR, NOSE AND THROAT—A. R. HOLLENDER, M.D., *Chicago*; F. L. WAHRER, M.D., *Marshalltown*; IRA O. DENMAN, M.D., *Toledo*; ELLIS G. LINN, M.D., *Des Moines*; F. B. BALMER, M.D., *Chicago*.

X-RAY AND RADIUM—A. F. TYLER, M.D., *Omaha*; R. W. FOUTS, M.D., *Omaha*; HARRY H. BOWING, M.D., *Rochester, Minn.*; R. E. FRICKE, M.D., *Rochester, Minn.*; R. T. PETTIT, M.D., *Ottawa, Ill.*

BIOPHYSICS—ALBERT BACHEM, Ph.D., *Chicago*.

BIOCHEMISTRY AND NUTRITION—VICTOR E. LEVINE, Ph.D., M.D., *Omaha*.

FOREIGN COLLABORATORS—ELKIN P. CUMBERBATCH, M.A., M.B., (Oxon) M.R.C.D., *London*; A. ROLLIER, M.D., *Leysin*; ALBERT E. STEIN, Dr. Med., *Wiesbaden*; AXEL REYN, M.D., *Copenhagen*; CARL SONNE, M.D., *Copenhagen*; FRANZ NAGELSCHMIDT, Dr. Med., *Berlin*; DR. JOSEF KOWARSCHIK, *Vienna*; SIR HENRY GAUVAIN, M.D., M.Ch., *Alton, Eng.*; A. R. FRIEL, M.A., M.D., (Univ. Dub.), F.R.C.S.I., *London*.

E D I T O R I A L S

UNITY, PEACE AND CONCORD

The lack of unity within the governing bodies of Physical Therapy organization in America has now reached a stage of vicious competition which is senseless and harmful to the interest of its future progress. We are now witnessing a reaction to competitive zealously which, to save the situation from irreparable damage, requires the cooperation of all concerned. East and West must meet on ground of mutual interest, or strife and civil warfare will make a shamble out of the very discipline from which both are deriving their highest inspiration.

Under these distressing circumstances it is a most appropriate sentiment, therefore, for us to pray for unity, peace and concord among American sectional organizations fostering the dissemination of scientific Physical Therapy. "Century after century from the altars of Christendom," remarks Osler, "this most beautiful of all prayers has risen from the lips of men and women, from loyal sons who have re-

fused to recognize its hopelessness . . . The desire for unity, the wish for peace, the longing for concord, deeply implanted in the human heart, have stirred the most powerful emotions of the race and have been responsible for some of its noblest actions."

Organized Physical Therapy is at this very moment confronted with the warring problems of sectional competition, the results of which have now become unfortunately extended beyond the original intentions of the separate factions. The reforms and high resolutions which originally animated the purposes and ideals of these bodies was conceived in the idealism of promoting the wider dissemination of scientific knowledge. But fortuitous circumstances such as we are facing today often vitiates the most prophetic of visions. Under these conditions possibilities must give way to actualities, ideals must adapt themselves to the practical demands of the moment. To survive, the biologic and social organism must often become flexible, pliable

and persuasive to the exigencies and the influences of the period. Concord becomes discord, unity becomes divisional in the presence of adverse and hopeless conditions. Only the flexibility of spirit, the *Geist* of the idealist, can make possible the reforms and the resolutions that have been the excuse for the separate existence of these competing organizations.

By such a spirit of tolerance only can organized Physical Therapy extricate itself from the perilous cul-de-sac, the economic emasse, that it is now confronted. Fusion of interests have been suggested by many of the outstanding leaders as a guarantee against the diffusion of purposes. Such a unity will raise intersectional concord. It will increase our community of interests. It will tend to promote the same aims, raise our standards to a higher level, promote a feeling of closer comradeship and good will, and reduce chances of misunderstanding and increasing friction in our ranks.

Seldom has a time been more propitious, the opportunity greater, the need more pressing than at this very moment for a reconsideration of our problems as related to the future welfare of physical therapy in America. Hostile and competing organization have engendered confusion and mutual distrust in place of cooperation and enlightenment. Divided fronts have unnecessarily burdened the respective members with heavier taxation to support the additional armament of the competing groups.

Kovács in a letter published elsewhere in this issue, has tersely pointed out the fallacy of exhaustive competition by organizations motivated by similar purposes—the exploitation and dissemination of scientific information as related to the study and practice of Physical Therapy. The fact that many practitioners belong to both the American Congress of Physical Therapy and to the American Physical Therapy Association, and since their “aims and activities have been running parallel during recent years,” has but duplicated the work of both organizations without enhancing the value of their dual existence. Arguments more potent than the one just cited above are the imperative need for financial curtailment in the face of the economic storm that is now playing havoc with everything within its influence. Hence it is well to heed

the practical warning of Kovács that, “The present economic crisis has forced some men and will force many more to take their choice and resign from one or the other organization in order to save paying dues to two similar societies.” His plea for the amalgamation of both societies is not an isolated inspiration. Letters from outstanding leaders in the specialty have come to our attention in recent times advancing similar sentiments in regard to this situation. It is to the credit of the progressive leaders in the East that they have taken first action in the remedying of this emasse.

The American Congress of Physical Therapy readily appreciates the advantages of any arrangement equitable for all concerned. It is in sympathy with such a movement and offers wholehearted cooperation. It is tolerant to the sentiments for fusion and it prays for unity, peace and concord in our ranks. In the words of Kime, “United we stick, divided we are stuck.”

Reference

- Osler, William, *Aequanimitas with Other Addresses*, London: H. K. Lewis & Co., 1925.
Kovács, Richard, *Correspondence*, Arch. Phy. Ther., X-Ray, Rad., **13:206**, (April) 1932.

THE PROBLEM OF THE HARD OF HEARING

There is no problem confronting the public of today that is more serious from several standpoints than the hard of hearing. In America alone, Newhart⁽¹⁾ points out, several million individuals are suffering from a hearing impairment sufficient to cause them decided economic disadvantage, limit their educational development and impose a real barrier of social isolation from their fellows.

Unfortunately, many of this large group of hearing invalids become so thoroughly discouraged by the prognosis of reputable otologists that they reconcile themselves to their fate and seek no means to overcome their impairment. The plight of the patient with otosclerosis is too well known. He is told to master lip reading and to forget that there is such a thing as a cure for him. This, doubtless, is good, sound advice, but our method of dealing with this class of patients must not rest with such a decision. It is too

destructive and has done more harm than good.

The otologist is charged with the responsibility of assisting the deafened patient in every way possible. To give an unfavorable prognosis about a hearing impairment is far from aiding the individual toward rehabilitation. Something more constructive is essentially necessary.

Modern otologists have long ago appreciated the fallacies of the other methods of dealing with the deafened patient. Now, through the agencies of organized societies, they are carrying on a program of education, which includes, principally, advice on the correct means of overcoming, in so far as possible, the obstacles of everyday living. The excellent work of the American Federation of Organizations for the Hard of Hearing is especially noteworthy and its leaders should be commended for their efforts in this humanitarian endeavor. This organization in cooperation with the Bureau of Standards conducted a survey of electrical hearing aids and made much progress in the matter of rating instruments according to their real efficiency.

Hearing aids are but one means of rehabilitating the partially deaf and, in the light of our present knowledge, are an important adjunct to other procedures. There are many devices now on the market, a large majority of which are either inadequate or too cumbersome for practical utilization. A device to be serviceable must possess certain desirable qualities. These have been enumerated by Newhart in his paper elsewhere in this issue.

To further simplify the problem of management, attempts have been made to classify the hard of hearing. One such special classification has been made in connection with the use of electrical hearing devices by Dr. Harry Fletcher, director of the acoustic division of the Bell Telephone Laboratories. This classification is referred to by Newhart in his writing and further amplified by his views which are based on an extensive experience in dealing with this problem.

It is imperative that a patient seeking a mechanical hearing aid first have a careful otological examination. The counter prescriptions of department stores and surgical

houses are to be condemned. They invariably lead to poor results and further discouragement on the part of persons seeking help for their invalidism.

"The otologist can greatly assist the purchaser in the selection of such an aid. The choice should be based not on loudness, for the ultimate test of serviceability is that of intelligibility when tried out in comparison with other instruments. The makers of hearing aids of real merit encourage this plan of purchase."

While local treatments are often futile in restoring or even improving the hearing function, the recognition of obvious factors in the patient's general condition and mode of living has not received sufficient attention. The main purpose of periodic examinations is to maintain the highest standard of health possible and thus indirectly aim toward a preservation of such residual hearing as may exist. The influence of the general health on progressive deafness needs greater emphasis.

An additional adjunct toward rehabilitation of the deafened is lip or speech reading. This art has been mastered by thousands of people and is, indeed, a remarkable means of assisting those whose hearing function has progressed beyond audition of ordinary conversation.

As Newhart concludes: "Deafness, while in many cases incurable, is being made vastly more tolerable by the help of hearing aids and the application of modern sociological methods in helping the deafened to help themselves. The physician can be of great assistance to this large group in their efforts to solve their peculiar problems."

Reference

Newhart, Horace: Aids for the Hard of Hearing. *Arch. Phys. Ther., X-Ray, Radium*, 13:202. 1932.

OCCUPATIONAL THERAPY IN MINNESOTA

A realization of the value of occupational therapy for those temporarily or permanently disabled by accident or disease was one of the few tangible good results of the World War. Interest in this form of reconstructive work has persisted to some extent during the post-

war period in its application to every-day casualties, but the medical profession is not acquainted with the nature or extent of this activity in our own state.

Occupational therapy consists of work specially selected for the patient partially or totally incapacitated by accident or disease, to accelerate the individual's return to his vocation or when necessary the teaching of new trades. The various centers are not self-supporting, as the money realized on the sale of articles less the cost of materials is turned over to the worker. Thus the various therapeutic centers require some financial backing.

The economic value of this type of work is considerable. It hastens the return to economic independence and thus relieves the always heavy burden on charitable undertakings. The psychic effect on the patient is fully as important. These individuals are given work, which is an essential to happiness, and are able to be at least partially self-supporting. Their morale as well as that of the institution is thus enhanced. Patients as a rule are enrolled only on recommendation of the attending physician and the type of work is selected in coöperation with a trained supervisor. Physiotherapy is a valuable adjunct in many instances and should be available at each center.

The training is carried out, in the larger centers of population, at headquarters known as curative work shops, in the hospitals, and in the home. Games and entertainment in the form of reading are adjuncts in the hospitals particularly.

The types of cases enrolled include those suffering from fractures, encephalitis, spastic paralysis, poliomyelitis, nerve injuries, congenital deformities, arthritis, heart disease, tuberculosis and mental trouble.

In the larger centers of population—Minneapolis, St. Paul, Duluth, St. Cloud, and Rochester, for instance—vocational centers have been in operation for a varying number of years. These are supported by different agencies.

In Minneapolis the Curative Work Shop is being supported by the Citizens Aid Society and the Minneapolis Foundation as a demonstration of the need for such a service. The shop is under the direction of the Visiting Nurses Association but is a project of the Junior Board of the Visiting Nurses Associ-

ation and the Junior League of Minneapolis.

In St. Paul, a Curative Work Shop was established in 1928 as a private enterprise by its director, Miss Martha R. Eming, as a demonstration of its need. Over a hundred cripples have been enrolled. Efforts so far to interest charity organizations or those philanthropically inclined have been unavailing and financial assistance will be necessary if the work is to continue.

In Duluth an organization known as the Duluth Association for Physically Handicapped sponsors the work, which is carried on in St. Mary's and St. Luke's hospitals and among the home-bound.

Many of the state institutions for the insane and the county tuberculosis sanitarium have their units.

Occupational therapy is taught at schools, sanctioned by the American Medical Association, at Boston, Philadelphia, St. Louis, Northwestern University, and Milwaukee Downer College. Graduates are registered in the American Occupational Therapy Association, of which the Minnesota Association of Occupational Therapy is a component organization. The state branch holds quarterly meetings in different parts of the state for the purpose of promoting the work and keeping up professional standards.

We know of no more worthy constructive undertaking than this. The insurance companies might well become interested from the money standpoint. Each community should possess a center and furnish the necessary financial support. The physician is in a position to lend his coöperation.—(*Minnesota Medicine*, April, 1932.)

Post Graduate Seminar in Physical Medicine

Interest in the curative and diagnostic powers of physical therapy is becoming daily more manifest, as exemplified by the large attendance to these symposia held in New York. A post graduate seminar in physical therapy (medicine), similar in scope to that which was recently offered by the New York Physical Therapy Association is now inviting our attendance in Philadelphia. The seminar lectures are sponsored by and are to be held

under the auspices of the Committee on Education of the Philadelphia County Medical Society, Dr. Seth A. Brumm, chairman, in collaboration with the Pennsylvania Physical Therapy Association. The program has been arranged in the following manner:

A free introductory seminar in physical medicine will be conducted during the week of April 18th, 1932.

A series of didactic lectures by outstanding authorities will be given in the Memorial Auditorium of the Philadelphia County Medical Society, at 21st and Spruce Streets.

The didactic course will cover the elements and clinical application of various physical agents. It will be divided into four parts:

1. Light Therapy. Monday, April 18th—8:30 P.M.
2. Electrotherapy. Tuesday, April 19th—3:00 P.M.; Wednesday, April 20—3:00 P.M.
3. Hydrotherapy. Thursday, April 21st—3:00 P.M.
4. Mechanotherapy (Massage and Corrective Exercise). Friday, April 22nd—3:00 P.M.

Among the prominent speakers who have accepted places on the program are:

Dr. W. W. Coblentz, Member of Council on Physical Therapy, A. M. A., *Physics of Ultra-violet and Infrared Radiation*.

Dr. Richard Kovacs, Chairman, New York State Med. Society Committee on Physical Therapy; Clinical Professor and Director of Physical Therapy, Polyclinic Medical School, New York City, *The Galvanic and Low Frequency Currents*.

Dr. Norman E. Titus, Director, Physical Therapy Department, Presbyterian Hospital, New York City, *Static Electricity*.

Dr. William Bierman, President, New York Physical Therapy Society; Director, Physical Therapy Department, Beth Israel Hospital, New York City, *The Therapeutic Use of Electrically Induced Fever*.

Dr. Harry E. Stewart, Formerly Assistant Director, Section on Physical Therapy, Office

of the Surgeon General, U. S. A.; Director of the New Haven School of Physical Therapy, New Haven, Conn., *Medical Diathermy*.

Dr. K. G. Hansson, Director of Physical Therapy Department, Hospital for Ruptured and Crippled, New York City, *Posture and Exercise*.

There will also be speakers on the clinical use of ultraviolet rays and on radiant heat and infrared therapy; on electrosurgery; on hydrotherapy and hydrogymnastics; and on massage.

In addition, a series of clinical demonstrations of cases and of technic will be offered at the following hospitals:

Graduate Hospital, S. E. Cor. 19th and Lombard Sts. Dr. William T. Johnson, Dr. Frederick A. Cochran and staff. Monday—11:30 until 2:00 P.M.; Wednesday and Friday—1:30 until 3:30 P.M.

Jefferson Hospital, N. E. Cor. 10th and Walnut Sts. Dr. William H. Schmidt, and Staff. 11:00 A.M. until 1:00 P.M. daily.

Temple University Hospital, N. E. Cor. Broad and Ontario Sts. Dr. Frank H. Krusen, and Staff. 9:00 A.M. until 12 noon, daily.

University of Pennsylvania Hospital, S. E. Cor. 34th and Spruce Sts. Dr. Joseph B. Nylin, and Staff. 9:00 A.M. until 10:00 A.M. daily.

The course is designed for the benefit of the general practitioner. It will begin with the simplest primary instruction and will proceed by regular steps to the more advanced technique of the various modern treatments.

It is planned to show when Physical Therapy is indicated, the necessity for proper treatment, and the dangers arising from improper and unskillful treatment.

While no fee will be charged for this course, in order that it may be limited to qualified licensed practitioners of medicine, it will be necessary to register for the course and to present a card of admission which will be furnished to all registrants.

QUERIES AND CLINICAL NOTES

Q. What is the influence of diathermy upon gastric secretion and motility?

A. The investigation of this subject was made and reported on by Chas. E. Stewart and W. N. Boldyreff (*Bull. Battle Creek San. and Hosp. Clinic*, **24**:247, Oct., 1929). In their conclusions the authors state: "In the state of rest of the gastric glands (with an empty stomach and absence of secretion of gastric juice) diathermy stimulates the gastric secretion. The negative results were usually obtained in cases of pathologic condition of the stomach (chronic gastric catarrh, absence of appetite, abundance of gastric mucus)."

"As far as the properties of gastric juice are concerned, after diathermy higher acidity was observed and apparently a lower content of pepsin. Diathermy is capable of increasing secretion of gastric juice in the psychical phase of gastric secretion. Diathermy is capable of increasing secretion of gastric juice in the chemical phase of gastric secretion. The properties of gastric juice, secreted in both psychical and chemical phases of digestion, are altered by the influence of diathermy in the same way as in the case of the empty stomach.

"Diathermy has an inhibitory effect upon the contractions of the stomach during the absence of gastric secretion. The temperature in the stomach could be raised by means of diathermy from 1.0 to 1.5 degrees C.

"Diathermy also stimulates secretion of pyloric juice."

Q. Are physical methods of value in the treatment of gall-bladder adhesions?

A. Infrared radiation and diathermy have been used to advantage in this condition. Levy (*Physical Therapeutics*, **47**:329, June, 1929) discusses the subject at length and speaks favorably of his results. The use of diathermy is preceded by infrared radiation over the site of the incision for one-half hour. Frequent treatments by the combined application of these agents are advised. "Enough cases have been treated by this method to give it a place in the treatment of periduodenitis.

Duodenal irritation seems to be relieved and, when temporary obstruction due to spasm has existed, this tends to disappear, resulting in marked lessening if not entire disappearance of symptoms." The method merits a trial before operative procedure is attempted, especially in cases in which the symptoms and the condition of the patient are not serious enough to warrant immediate surgical intervention.

Q. What is the treatment of nevi? Has radium been used successfully?

A. Surgery, radium and the x-ray have not been successfully employed in treating nevi. In fact, there is reason to believe that surgical excision is inferior to some of the more recent procedures which have produced improved results. Klauder (*Penna. M. J.* **33**:472, April, 1930) suggests electrodesiccation. In his opinion other methods are dangerous. By the use of electrodesiccation the potentiality of malignancy is avoided. This is an important consideration and should be emphasized in the propaganda for the control of cancer. The technic advocated by Klauder is the one which is commonly applied for superficial lesions.

Q. When is diathermy indicated in pneumonia? Has the use of diathermy influenced the mortality rate?

A. There is some difference of opinion on this subject, and at best the indications for the use of diathermy in pneumonia are not well defined. Numerous articles have appeared in the medical literature since the world war dealing with the experiences of investigators. Some of these reports draw no sharp lines in the use of diathermic treatment, while others attempt to rationalize its application. Lilien and Echtman (*Med. J. and R.*, Vol. CXXVII, No. 2, Jan. 18, 1928) state that as a rule diathermy is indicated in acute pneumonia, especially so when the symptoms are becoming or already are alarming: the temperature is high, the patient is delirious, the pulse is extremely rapid, cyanosis is deep, the respiration rate is high, the breathing is very shallow, and the

cough remains unproductive. Not infrequently in a pneumonia case with such alarming symptoms, after a few diathermy treatments an entire change of the picture takes place: cyanosis lessens, respiration becomes deeper, the quality of pulse improves, the rate decreases, the temperature is lowered, and the cough becomes productive. Furthermore, according to these authors, auricular fibrillation that develops occasionally in similar pneumonias or other types of pneumonia where the toxemia is great, has been changed to a perfect normal rhythm after a few diathermy treatments.

Freeland (*The Med. Sentinel*, Vol 36, No. 9, Sept., 1928) quotes Stewart as follows: "The mortality of the treated group was 55 per cent less than the mortality of those who had not received diathermy. The grand average death rate of all cases treated by diathermy reported to date is 14 per cent, or about one-half the average expected mortality in this disease based on the average age and condition of the patients. These figures would indicate diathermy is a factor in lowering the mortality for pneumonia."

Q. Is roentgen therapy employed in myeloid leukemia?

A. Hammerschlag and Knopse (*Strahlen-therapie*, 37:693, Sept. 2, 1930) report on this subject. The following is an abstract (*J. A. M. A.*, Nov. 29, 1930) of the original article.

"Hammerschlag and Knopse report the case of a woman, aged 35, who was admitted to the hospital with a presumptive diagnosis of an ovarian tumor. On examination, the genitalia appeared normal; the abdominal tumor proved to be an extremely enlarged spleen descending into the small pelvis. Blood examination pointed to a typical myeloid leukemia; the number of leukocytes was 255,000, with a predominance of myeloblasts. On account of the poor general condition, extirpation of the spleen was excluded and roentgen therapy was tried. One-third of a unit skin dose was applied to a field 10 by 15 cm. About 190 kv. and 2 milliamperes were used for the irradiation, with a zinc filter of 0.5 mm. and an aluminum filter of 1.0 mm.; the focus-skin distance was 40 cm. The irradiation was well tolerated by the patient. On the fourth day after the irradiation, the fever disappeared; the general condition improved.

The number of leukocytes became reduced to 88,000; the blood picture approached normal. On the eighth day, the size of the spleen decreased; its lower border could be perceived beneath the umbilicus. After a sojourn of two weeks in the hospital, the patient was discharged. She was readmitted to the hospital a year later. On blood examination, 120,400 leukocytes and a predominant number of myeloblasts were found. The spleen reached the upper edge of the pubic symphysis. The irradiation was renewed (the same dose of rays as the first time); within fourteen days the number of myeloblasts decreased and that of the leukocytes was reduced to 70,000. The size of the spleen became smaller by three fingerbreaths. Up to the present, the irradiation has been twice repeated. During the two years of treatment, the patient was able to do housekeeping. It is expected that, by continuing the treatment, the improvement of the patient may persist."

Q. Are physical therapeutic measures of value in the management of leg ulcers?

A. Behan (*Arch. of Phys. Therapy, X-ray, Radium*, Sept., 1930) states: that they may be extremely difficult to treat, and even when healed it is very hard to keep them cured permanently. Many of these ulcers are due to the stasis resulting from varicose veins. The removal of these veins will aid and sometimes cure the ulcer. Varicosities are now usually treated by local intravenous injection of an agent which is destructive to the intima of the vein. However, there are a certain number of these ulcers which do not heal even when the associated varicosities are corrected. There are also a certain number which are not associated definitely with any varicosity. In these, one should seek for a diabetic or syphilitic basis, and, especially, the blood sugar should be estimated.

There is a further group of which the causative factors is extremely difficult to determine. This group, in which ulcers are indolent, do not have a red, granulating base, but a grayish floor. The edge is not abrupt or elevated but seems to slope gradually towards the base of the ulcer. Epithelium, as is known, will not heal unless there is granulation tissue, over which it grows. As these ulcers do not have granulation tissue at the

base, it is necessary to stimulate the formation of this tissue by irritation with silver nitrate or with the cautery. It is also necessary to keep the circulation of the limb to a high degree of efficiency. The ultraviolet light, the radiant light or diathermy is of considerable value. In one case, Behan applied the galvanic current with the idea that it would produce a relaxation of the vessels in that area. The current was directed in both a transverse and a longitudinal direction across the ulcer. Marked improvement took place following a series of these treatments.

Q. Has diathermy produced beneficial results in so-called medical kidney diseases?

A. According to Kolischer, (*Arch. of Phys. Therapy, X-ray, Radium*, Aug., 1927), medical diathermy if properly applied is one of the most powerful methods at our command in order to reestablish a proper elimination not only of the kidneys but of the intermediate structures which are just as important. A differential diagnosis is essential because it must be known where and how to apply the diathermy. Secondly, it must be known how to support the diathermy by all other proper measures that have to be considered in order to provide the possibilities of a successful therapy.

The technic is described by the author in his original article. He has often pointed out his experiences in treating medical kidney diseases and advocates the use of diathermy because he has found that it meets the indications on a sound pathologic basis.

Q. What is the status of irradiated milk for nursing mothers as a prophylactic against rickets?

A. Scheer and Sandels (*Münchener Medizinische Wochenschrift*, 77:1543; *Ab. J. A. M. A.*, Nov. 22, 1930) point out that fresh milk which is intensively irradiated under exclusion of oxygen, in an atmosphere of carbon dioxide, acquires antirachitic properties and the taste and odor remain unchanged. It was found that when from 400 to 500 cc. of such milk was given daily to children with severe rickets, they recovered in from four to eight weeks. An added advantage was that the milk was harmless. Up to now this method of treatment or prophylaxis of rickets was not available for breast-fed infants.

Therefore the authors investigated whether the antirachitic factor of irradiated milk could not be transmitted to the child by giving the mother irradiated milk. Premature infants, in whom the early symptom of rickets, craniotabes, is most noticeable, were fed with milk from wet-nurses, who drank daily 500 cc. of irradiated cow's milk. The milk of these women was also given to several rachitic rats. Both experiments proved that human milk acquires antirachitic properties if the mother drinks irradiated milk.

Q. What effect is produced by irradiated ergosterol on the calcium concentration of the blood serum in pulmonary tuberculosis?

A. The following résumé of an article by Kaminsky and Davidson (*Am. J. of Tuberculosis*, July, 1930) is taken from the *Journal of the Oklahoma State Medical Association*, Vol. XXII, No. 9.

"Rather striking effects on blood calcium have been noted following the oral administration of irradiated ergosterol. It has been noted that in cases with abnormally high blood calcium brought about by ingestion of this drug, the rise persisted for a considerable period after the irradiated ergosterol had been discontinued. It was thought it might be of interest to inquire into the effects of irradiated ergosterol on the serum-calcium concentration in pulmonary tuberculosis and note its influence on the course of the disease as may be revealed by clinical and roentgen ray findings.

"The author selected 10 men for preliminary study, their ages ranging from 17 to 30. Two preliminary serum-calcium determinations were done; the first reading was taken eight days and the second one two days before the first dose of the drug was administered. Blood was drawn from the arm, on a fasting stomach, and the serum-calcium determined.

"Twenty drops of ergosterol were administered daily in one dose at 9 A. M. for seven days and another serum-calcium determination was done 22 hours after the last dose of the drug was given. There was a considerable rise of the serum-calcium concentration in the entire series, raising the average for the series from 9.38 to 12.08 mgm. per 100 cc. of blood-serum."

CURRENT NEWS AND SCIENCE

New Members

Have you secured a new member for the Congress since its last annual convention? You promised to do so!

The Congress is now putting on an intensive membership drive. We want to add one hundred new members in the next sixty days. Are you willing to assist in this laudable work?

It is a comparatively simple matter to interest one of your colleagues in the work of the Congress. Any doctor who is doing physical therapy or who is sufficiently interested in its progress cannot help but observe the excellent promotional work of the American Congress of Physical Therapy. The Congress owns and publishes its own scientific journal which has been acclaimed the best in the field. The Congress stands for the highest ideals in the newer science and constantly endeavors to elevate its standards. The central office of the Congress covers a tremendous amount of work—all for the good of physical therapeutics.

The annual convention which will be held in New York, September 6, 7, 8, 9, 1932, promises to be the outstanding gathering in the history of the organization. Your associate or your colleague will want to attend this session—as a fellow of the Congress. Secure his application now and forward it to the central office in Chicago.

In Whom Is Ownership of X-Ray Plates Vested?

An interesting item concerning ownership and right of possession of roentgenograms was printed in *The Journal of the American Medical Association* of November 21, 1931. Because ownership and right of possession are questions that again and again come to the front in both hospital and private practice, the item is here reprinted. It reads as follows:

"The question whether the roentgenograms of a hospital patient belongs to the patient or to the hospital was answered by a court for the first time, so far as is known, in Hurley

Hospital vs. Gage," decided on appeal April 21 by the circuit court for the county of Genesee, Michigan. The patient had been roentgenographed in the roentgenographic department of the Hurley Hospital at Flint. The usual charge for the service was included in the patient's bill. He made a payment on account, but refused to pay the charge for the roentgenographic service unless the roentgenograms were delivered to him. The hospital refused to deliver them and sued the patient for the balance due. In the justice's court, where the suit was instituted, judgment was given against the hospital. The hospital, however, because of the principle involved, appealed to the circuit court of Genesee County. At the hearing on the appeal, no one appeared on behalf of the patient and the case was heard and judgment rendered without the submission of evidence or argument by him. In giving judgment, the court pointed out that the hospital sold and patients paid for, not the material that went into roentgenograms, but knowledge and experience. The protection of the hospital might depend largely on the proper preservation of the roentgenograms and, said the court, the films should remain in the hospital. Judgment was given against the patient for the balance due on his bill, covering the amount charged by the hospital for the roentgenograms."

Stomach Aches May Be Warning Signal From Heart

Pain in the abdominal region is not always a mere querulous complaint from that fussy and often-clamoring organ, the stomach. It may be a report of serious trouble from an organ higher up where trouble is apt to be serious, indeed—the heart.

So two physicians, Dr. Louis Faugeres Bishop and Dr. Louis Faugeres Bishop, Jr., of New York City, have reported to the American Association for the Advancement of Science.

Prominent persons reported by the press as dying of "acute indigestion" are often victims of heart disease, they declared.

"Every year a number of persons with obstruction of the arteries supplying the heart with blood are subjected to an operation involving the opening of the abdomen in the search for the cause of the severe pain referred to regions belonging to the diaphragm," their report said. "If this happens when every means has been employed to test the possible cardiac origin of the pain by a technical examination of the heart, nothing is to blame except the limitation of medical knowledge. Changes in the electricity of the heart often gives the only positive information that may prove the existence of coronary thrombosis and avert a dangerous operation."—*Science News Letter*, January 16, 1932.

British, Canadian and Ontario Dental Convention

The British, Canadian and Ontario Dental Associations will meet in joint convention at the Royal York Hotel, Toronto, August 8th to 12th this year. Prominent essayists and clinicians from the British Isles, the United States and Canada will have a part in the program. Members of the American Dental Association are invited to attend.

The Effect of Toxic Doses of Irradiated Ergosterol Upon the Composition of Rat Bones

J. H. Jones and G. M. Robson (from the Laboratory of Physiologic Chemistry and Laboratory of Pathology, University of Pennsylvania). The premise that irradiated ergosterol, at least in large amounts, can increase the absorption of calcium (and possibly phosphorus) from the intestinal tract and also mobilize this element from body tissue is being gradually substantiated. The most obvious source of body calcium is the skeleton, and several attempts have been made to show that inorganic constituents have been withdrawn from the bones during irradiated ergosterol intoxication. The results of chemical analyses of bone have been somewhat contradictory and misleading due primarily to the use of growing animals. Since there was a normal increase in the percentage of bone ash of the controls during the experimental period no reliable basis for comparison was available. In other cases insufficient vitamin D preparation was given to produce a toxic condition or so

much was administered that the animals died before irradiated ergosterol had opportunity to exert any influence on the bones.

In the following experiments 36 rats divided into 3 groups were used. When placed on experiment the animals varied in age from 68 to 138 days. Two groups were used as controls, the first of which was killed at the beginning and the other at the end of the experimental period. Sufficient irradiated ergosterol was given to the experimental animals to cause toxic symptoms followed by death within 6 weeks to 2 months after the beginning of the feeding. The right femur from each animal was removed and analyzed for ash. The distal end of the other femur and the proximal end of the corresponding tibia were removed and fixed for histologic examination. Before ashing, the right femora were Roentgen-rayed in a group on one plate. The ash analyses revealed that, in general, there was a marked decrease in the percentage of bone ash; the maximum reduction being about 10 per cent when compared with a litter-mate control. Upon histologic examination it was found that the cortex of the shaft had become very porous. The porosity was due to a complete destruction and resorption of organic as well as inorganic matrix, and the spaces so formed were filled with marrow. Under the high power magnification many osteoclasts were discernible which would indicate an osteoclastic destruction of the bone. There was no evidence of a simple chemical removal of the inorganic salts. The densities of roentgenograms were determined with a densitometer. It was found that the densities of the negatives of the bones of the experimental animals were about 10 per cent greater than those of either of the control groups. Since the measurements were made on the negative, the densities of the bones themselves would be correspondingly decreased. There were a few discrepancies between the chemical, histologic and Roentgen ray findings but these occurred among the younger animals. All experimental animals above 100 days of age showed a loss of bone matrix as shown by chemical, histologic and Roentgen ray studies. No evidence was obtained to indicate that this action is specific for irradiated ergosterol. It is possible that chronic intoxication caused by other substances may produce similar effects.—*Am. Jour. Med. Sc.*, (Feb.), 1932.

A New Stereofluoroscopic X-Ray

A stereofluoroscope roentgen ray instrument that shows the inner workings of the human body as though it were a motion picture has been perfected at the California Institute of Technology, Pasadena, and practical medical experiments will be conducted at the Henry Phipps Institute in Philadelphia. Several months ago a rough experiment model was completed and when it proved successful funds were secured from the Rockefeller Foundation for the construction of a more elaborate instrument designed for use in hospitals. The instrument is so constructed as to give the impression of a three-dimensional stereoscopic plastic relief, and calipers are provided that can be introduced into the image and brought into apparent contact with any two parts of the image whose separation or size is desired.

Insanity Study Gives New Drug Addiction Treatment

A NEW method for the treatment of morphine addiction has been suggested to the National Academy of Sciences by Dr. Wilder D. Bancroft, Dr. Robert S. Gutsell and J. E. Rutzler, Jr., of Cornell University. Their investigations with dogs showed that the chemical, sodium rhodanate, would prevent withdrawal symptoms when animals addicted to morphine were abruptly deprived of the drug.

"The way is clear for the use of sodium rhodanate in the treatment of drug addiction in human beings," their report, published in the Proceedings of the National Academy of Sciences, concludes after describing the investigation.

A major difficulty in "curing" drug addiction has been the fact that when the addict is deprived of the drug to which he has become habituated, he suffers intolerable pain, nervousness, sleeplessness and prostration. These withdrawal symptoms are only relieved by the drug from which he is trying to be freed. Various methods of bringing the patient safely through this stage have been advocated but none has been unqualifiedly successful.

Sodium rhodanate, given a short time before the morphine is withdrawn, prevented the onset of withdrawal symptoms in the morphine-addicted dogs.

The use of this chemical resulted from Dr.

Bancroft's earlier study of insanity. He believes that many brain disorders are caused by the jelly-like colloid substances of the brain being either too thick, or too thin. In morphine addiction these brain proteins are too thick and sodium rhodanate thins them, Prof. Bancroft has found.—*Science News Letter*, January 16, 1932.

"Branding" of New Born

A method of "branding" new born infants has been instituted in Shore Road Hospital, New York City. The plan was devised by Dr. Herman Goodman in 1928. This new ultraviolet ray method is said to make mistakes in identification impossible. The mother's arm and the infant's thigh are "branded" with initials and numerals made by ultraviolet rays and stencils. The captions become visible within five hours and may last as long as nine months. The method is claimed to be the best yet devised, and more "fool proof" than any previous one.

New Find Points to Man's Descent From Sea Scorpion

Vertebrate animals of all degrees, including man himself as a physical being, were traced back to an obscure race of sea scorpions, now known only as fossils, by Prof. William Patten of Dartmouth College, speaking before the American Association for the Advancement of Science.

The connection between the highest vertebrate forms and these humble ancient arachnids of a thousand million years ago links through the extinct group of sub-fishlike creatures called ostracoderms. For years Prof. Patten has held for an ancestry of vertebrates through ostracoderms, but certain fossil evidence has been lacking. Now, from the island of Oesel in the Baltic Sea, come well-preserved ostracoderm specimens that fill the gap. They show how the face of the vertebrate type of animals was founded by the union of a number of skeletal arches in the mouth region of the ostracoderm. The outstanding feature of the change was the shift from the lengthwise, slitlike mouth of the invertebrate type, opening sideways, to the typical crosswise mouth of the vertebrate type, with jaws that work up and down.—*Science News Letter*, January 16, 1932.

New Radium Discoveries in Canada

Two new rich radium-bearing ore veins were discovered at Great Bear Lake, in north-west Canada, just before the winter freeze-up stopped further prospecting, Hugh S. Spence, Canadian Department of Mines expert, has revealed at conferences with Washington geologists. As official visitor to the radium strike in Northwest Territories Mr. Spence aided in the discovery of the new bodies of pitchblende ore.

Earlier reports of the rich finds of Gilbert La Bine, discoverer of the original radium ore deposits, were authenticated by Mr. Spence, who stated to Science Service:

"Beyond any question the pitchblende deposits at La Bine Point constitute a very valuable source of radium. At the present value of radium, ore could easily meet the \$400 per ton cost of shipment to the railroad."

More and larger amounts of pitchblende than yet found, containing at present prices, \$6,000 to \$8,000 worth of radium to the ton, may yet remain to be discovered, Mr. Spence predicted. Two of the veins have been traced for distances of 1400 to 2500 feet and all four seem to run together like the fingers of an outspread hand. A still larger and more valuable deposit may lie at the "wrist" somewhere to the northeast of the present workings.

Another new strike of the precious pitchblende, 12 miles distant from Echo Bay, where the first vein of La Bine's Eldorado Gold Mines, Limited was located, has already been reported on the ground of the rival Northern Aerial Minerals Exploration Company.

Planes were arriving during all the time of his stay at La Bine Point on the Great Bear Lake, Mr. Spence said. These were carrying prospectors on the lookout for further silver deposits. La Bine's number two pitchblende vein interlaced with valuable native silver veins, the best so far discovered in the region, assaying some 9,000 ounces to the ton, had roused the hopes of adventurers.

Only two men are on the ground at present because of the freeze-up, said Mr. Spence, but mining operations will be started again next month. Fourteen surface pits were being worked at the time of his visit last summer. The ore obtained from these by hand picking

averaged 50 per cent uranium oxide or about one gram of radium to eight tons of ore.—*Science News Letter*, February 20, 1932.

Tiny Apparatus Devised to Regulate Radium Treatment

A tiny apparatus hardly larger than a pea, so that it can be introduced into most cavities of the human body, has been devised by Dr. Louis Mallet, head of the laboratory of the anti-cancer center of Tenon Hospital, Paris, to help physicians measure the amount of radiation that reaches various organs and parts of the body during radium treatment. The apparatus was described in a report made to the French Academy of Sciences.

When ordinary medicines are used in treating disease, the full dose can be introduced directly into the veins or stomach, for instance, but with radium it is difficult to know whether the full dosage of rays actually reaches the organ to be treated or whether some of the rays are deflected to other parts of the body. For this reason a device like Dr. Mallet's would be very useful.

His apparatus is called an ionization chamber. It consists of a small metal knob the size of a pin head within a slightly larger metal enclosure. The air between the two does not conduct electricity under ordinary conditions, but becomes conducting under the influence of radium. These tiny chambers are first screwed onto an apparatus which charges them to about 160 volts. Then they are introduced into any part of the body, such as the throat, which is being exposed to radium. After a given time the ionizing chambers are taken out and their loss of voltage measured. This gives a measure of the intensity of radiation to which the chambers have been exposed in the body, and consequently to the amount of radiation to which that part of the body has been exposed.

Dr. Mallet is already known for his invention of a similar device which is used in many hospitals for measuring indirectly the strength of radiation employed in cancer treatment. The advantage of the new method is that one or more of the ionizing chambers can be introduced directly into the body, and that they can be sent out to be used by physicians and afterwards returned to a central laboratory for measurement.—*Science News Letter*, February 13, 1932.

THE STUDENT'S LIBRARY

BOOK REVIEWS

STUDIES IN THE PHOTO-ACTIVITY AND THERAPY OF THE TUNGSTEN-TITANIUM ARC. By *J. Burden-Cooper, M.D.*, and *Arthur Roberts, M.R.C.S., Eng.* Cloth. Pp. 85 with 20 illustrations. Price, \$3.50 net. New York: William Wood & Company. 1931.

The foregoing small volume is an intriguing contribution full of many therapeutic possibilities. It is a report based on studies with the radiations from tungsten-titanium arcs on experimental and clinical material. According to the authors, "this work . . . finds its justification in an attempt, first, to supply in response to repeated requests, both from the profession and others, information relative to phototherapeutic treatment by light derived from a composite electrode of tungsten and titanium; secondly, to correlate clinical result with scientific fact; and thirdly, to constitute some little record of three years' association in work in which we look back with the greatest pleasure."

The work is divided into two sections: the first introduces the experimental background and is devoted to the presentation of evidence in regard to the penetrative power of the above type of radiation, its bactericidal action, comparative analysis of its action on experimental material, and the infrared emission quality. There is also contained a summary based on these studies. The second section includes a discussion of its clinical effect on a mixed group of affections, together with a critical evaluation as regards the nature of the apparatus utilized, observations of the clinical results obtained from the effects of these radiations, illustration of case reports, and certain conclusions drawn from these investigations.

As a result of the foregoing studies, which utilized also comparative radiation controls from such known sources as quartz mercury burners, tungsten and combined tungsten with titanium, some rather striking facts of interest to all progressive students of phototherapy were demonstrated. For example, the degree of intensity of the tungsten-titanium arc electrode was found to be exceptionally brilliant, and the range of its spectra far in excess of any other form of artificial radiation, extending well into the infrared region. Its penetrating qualities were found to be in excess of the above controls, and its bactericidal powers exceptionally lethal to cultures of *B. coli*. In short, these rays were found to be potentially richer in the energy located within the vital portion of the spectrum than those from other artificial sources.

The illustrative cases appended to this report will no doubt have a special appeal to all who read for utilitarian purposes. Unquestionably, the weight of these favorable histories materially supports the the-

sis of this piece of research, but it must not be forgotten that the priority of similar results still remains with the older form of radiation. In the absence of clinical controls by other forms of radiation the evidence of any superiority from tungsten-titanium radiation is inconclusive but nevertheless, intriguing. The evidence presented in these pages is free from padding, is conservative in evaluation and is logical in exposition. One closes the book with a conviction that perhaps a new avenue of radiation has been opened up by these studies, radiations of greater potentialities and added therapeutic possibilities. This interesting book is highly recommended to the profession.

BODY MECHANICS: EDUCATION AND PRACTICE. Report of the Subcommittee on Orthopedics and Body Mechanics. By *Robert B. Osgood, M.D.*, Chairman, White House Conference on Child Health and Protection. Pp. 166. Cloth. Price, \$1.50. New York: The Century Co., 1932.

This is a report of a searching investigation made for the White House Conference on Child Health and Protection into the relation of body mechanics and posture to the health and well-being of children.

Body mechanics is defined by the Subcommittee which conducted the investigation as "the mechanical correlation of the various systems of the body with special reference to the skeletal, muscular, and visceral systems."

"There is positive evidence," the report says, "to prove that not less than two-thirds of the young children of the United States exhibit faulty body mechanics," and that this condition is likely to continue into adult life. The evidence gathered shows that improvement in body mechanics is associated with improvement in health and efficiency.

An important distinction is made in the report between training in the principles of good body mechanics and training in various physical exercises.

The detailed recommendations and the suggested program of corrective exercises presented here will be of value to all those concerned with the care and training of children.

PSYCHOLOGY AND PSYCHIATRY IN PEDIATRICS: The Problem. Report of the Subcommittee on Psychology and Psychiatry. By *Bronson Crothers, M.D.*, Chairman, White House Conference on Child Health and Protection. Pp. 146. Cloth. Price, \$1.50. New York. The Century Co. 1932.

This report, just published in the series of books sponsored by the White House Conference on Child Health and Protection, considers the important question, should the medical practitioner attempt to give advice when difficulties threaten the satisfac-

tory development of personality in a child under his care? The report is a challenge to pediatricians and family doctors.

Although the report does not urge all doctors to become expert in the fields of psychology and psychiatry, it states the opinion that adequate physical care of the child cannot be given without attention to whatever intellectual and emotional difficulties may be present, and concludes that when trouble arises and the individual child is in distress a well-informed and alert physician is the obvious adviser. "Unwillingness of doctors at large to acquire the ability to deal wisely with problems involving personality of the child," says the report, "may lead to transfer of this field to formal organizations or to individuals without medical experience. Such a solution will inevitably diminish both prestige of the private practitioner of medicine and the interest of his job."

There is little question regarding the import of psychology and psychiatry in pediatrics. There is little argument, too, that these subjects have received only negligible attention in the past. The problem is an extensive one. The attempt to define the status of the general practitioner in relation to the problem is a step forward in child study in general.

The calibre of the subcommittee on psychology and psychiatry is in itself an indication of the work which is attempted in this field.

The book merits careful study on the part of physicians, particularly those whose contact with the child in their every-day practice is an essential phase of their work.

HEMORRHOIDS; THE INJECTION TREATMENT AND PRURITUS ANI. By *Lawrence Goldbacher*, M.D. Second revised edition. Pp. 199 with 31 illustrations. Cloth. Price, \$3.50. Philadelphia: F. A. Davis Company, 1931.

The present treatise has been written for the general practitioner interested in the non-surgical treatment of hemorrhoidal affections and pruritus ani. Although it is not exhaustive in scope it has however managed to present the essential facts regarding the historical background of the disease, its definitions, the etiological factors, classification and surgical anatomy. The text has been broadly classified under four distinct subheadings; namely (1) General Considerations, (2) External Hemorrhoids and Treatment, (3) Internal Hemorrhoids and the Injection Treatment, and (4) Pruritus Ani. Brief consideration has been given to the management of the external variety of hemorrhoid. Attention is largely directed to the treatment of the thrombotic variety by means of excision and the emptying of the clots contained therein, and the surgical removal of anal skin tabs or tags. Attention is called to the practical suggestion made by the author to have the operator outline the exact locations of each tab prior to injection, marking its base with an indelible pencil, so as not to lose the anatomical landmarks which often follow after the infiltration.

The author has devoted great detail in the discussions connected with the injection of phenolized oil for internal piles and fissures. The success of

the method is not only here attested by the large number of case reports, but also by the clear and authoritative descriptive material incorporated in this portion of the text. The authors results are not only impressive from an academic point of view, but also appeal to our practical sense as a method worthy of reduplication. The text is generously interspersed with pertinent illustrations and legends, facts which tend for better understanding of the author's general arguments.

The work is concluded with an eminently practical discussion on the treatment of pruritus ani. The author argues that it is desirable wherever possible to find the cause of the difficulty. However, in the absence of causative factors the treatment used by the author has consisted in the injection of phenolized oil about the affected area in order to obliterate the troublesome condition. According to the author the results of phenolized treatment have been gratifying. In his opinion, "Treatment is based upon an attempt to close any potential or actual tissue spaces, by producing an aseptic inflammation, which later organized and firmly cements spaces together. Storage and transportation of acrid materials which irritate nerve endings and cause itching are thus provided." This treatise is highly practical in scope and original in its presentation. The revised second edition no doubt will meet with the same popular acclaim as the first because of the simplicity of the treatment methods herein presented.

COLLOID CHEMISTRY. By *Jerome Alexander*. Volume III. Pp. 655. Cloth. Price \$10.50. New York: Chemical Catalog Company, 1931.

Volumes I and II of the papers collected and edited by Jerome Alexander on Colloid Chemistry are already classical in the library of chemists and of all those who have to do with chemists. Now comes the third volume which is devoted to a series of papers on the technological applications of colloid chemistry. This type of book is encyclopedic in scope and in the variety of information that it furnishes. Whereas the bulk of the material contained in this volume is of interest particularly to other than medical workers, any medically inspired worker can obtain a tremendous amount of transfer value in applying the practices disclosed in these technological applications of colloid chemistry to purely biological problems. And this is true in particular of the chapters that have to do with results of x-ray researches on crystal structure; with the problem of adsorption by silica gel, in respect, for example, to intestinal toxic products; with suspensoids in electrical precipitation; with colloidal chemistry of soil; with colloidal chemistry of wheat; and indeed, with practically all the topics included in this volume.

That colloids are of tremendous significance in biological phenomena can hardly be disputed; that the transfer of the methods of colloidal chemical technology to problems in medicine would result in advances in discovery seems almost equally certain. In this sense, the present volume (and the two that have gone before it) should make a most valuable addition to any biological or medical library.

RADIOLOGICAL STUDY OF THE PARA-NASAL SINUSES AND MASTOIDS. By *Amédée Granger*, K.C.B., K.C.I., M.D., F.A.C.R. Professor of Radiology, Louisiana State University Medical Center; Director of the Department of Radiology, Louisiana State Charity Hospital, New Orleans. Octavo. Pp. 186 with 113 full-page illustrations. Cloth. Price, \$5.50 net. Philadelphia: Lea & Febiger, 1932.

An outstanding book written by an outstanding radiologist. The Granger technique for para-nasal sinuses is well known. It represents an outstanding contribution to the knowledge of sinus radiography. This study was begun in 1922 at the solicitation of the author's oto-laryngological colleagues in New Orleans. They had felt the need for radiographs furnishing fuller anatomical details in and more accurate boundary landmarks for the sphenoid sinus and the ethmoid cells. The initial success with the sphenoid and ethmoids served as a potent incentive to the author to extend this study to the adult mastoid and later to the infantile mastoid. Over a period of five years more than 6,000 examinations of the para-nasal sinuses and 1,800 of the mastoids were made.

The book is divided into two parts: Part I on the para-nasal sinuses and Part II on the mastoids. Technique and interpretation are emphasized as they should be in a volume of this kind. The illustrations are most instructive. Naturally some fundamental training is necessary for a full appreciation of these illustrations, but a careful analysis and study will reveal to the student those essentials which are paramount in comparing roentgen shadows with clinical findings. The student should be taught to correlate the results of laboratory and clinical examinations. It is by such means only that the ideal in diagnosis is approached.

The author stresses the point that a lateral view of the head will furnish little or no data of value for the diagnosis of pathological conditions in the para-nasal sinuses. "But a later view is of great importance in determining the size of the sphenoid, the presence of adventitious septa and, provided it is a technically near perfect teleradiograph (not less than 6 feet target-plate distance), for measuring the distance from the tip of the anterior nasal spine to the anterior wall of the sphenoid." The figures illustrating these points are given, and attention is directed to the importance of these measurements in surgery of the sphenoid sinus.

In detailing the technique which the author has used since 1923 for making radiographs of the mastoids in the Law position, six points are emphasized. The Arcelin position is also discussed. In order to overcome the difficulties and limitations, a new technique is suggested. This newer technique can be employed without the slightest effort on the part of the most feeble patient. In this section on the mastoid, interpretation is again emphasized. Small reference is made to the treatment of infantile mastoiditis with small doses of the Roentgen rays. The illustrations and the descriptive matter pertaining to

them at once show a certain carefulness with which this work has been prepared.

It is the opinion of the reviewer, an otolaryngologist, that this little volume represents a notable contribution to the subject. The author deserves much commendation for his untiring efforts in this branch of medicine. The publishers, likewise, should be congratulated for the excellent mechanical make-up of the book.

LOVETT'S LATERAL CURVATURE OF THE SPINE AND ROUND SHOULDERS. Edited by *Frank R. Ober*, M.D., Assistant Professor of Orthopedic Surgery, Harvard University, and *A. H. Brewster*, M. D., Instructor of Orthopedic Surgery, Harvard University. Fifth Edition, with 20 illustrations. Pp. 240. Cloth. Price, \$3.50 Philadelphia: P. Blakiston's Sons & Co., Inc. 1931.

The fifth edition of this popular book has been revised and brought down to date in accordance with the newer knowledge on the subject. The collaborators in this new edition, Ober and Brewster, have for example, added to the text Galeazzi's method of treating lateral curvatures. This section has been edited by Lewin, of Chicago, and Steindler, of Iowa City, both having had personal experience with Galeazzi's method. The results of this treatment have been as satisfactory as the method would permit. Its more uniform adoption by the better orthopedic clinics is prevented only by the rather high cost of apparatus. "The key to the correctibility of the spine lies in a long preparatory mobilizing treatment. The casts are changed every three months and the total duration of the cast period is from eighteen months to three years." The method although severe lends itself to correct the pathology by means of derotation and deflexion without the use of direct force.

There is here also included a discussion of the turnbuckle jacket for correction of structural lateral curvature of the spine. The authors call attention to its limitations in old ankylosed cases with marked rotation. It is an effective method "in cases of infants with congenital scoliosis who are too small to walk, and for curves the apices of which are higher than the eight dorsal vertebra."

The subject matter of this work has been organized under the well known classification current in medical literature. The fourteen chapters comprising this work follow the so-called outline form of discussion and separately considers the history, anatomy, function and mechanism of the spine; its symptoms, etiology, pathology diagnosis, treatment. The treatment of scoliosis has been considered from the functional and organic point of view. According to the authors, "such a distinction is not always sharply to be made . . . and many therapeutic measures are common to both classes of cases . . . as in most other departments of medicine and surgery where function and organic conditions are separated." Greater attention has, therefore, been devoted to the discussion of the therapeutic

exercises necessary for the functional type of cases, to the point that this section has been materially rewritten. In spirit as well as in context the book is one of the most representative contributions on the subject.

SCHLIEMANN. *The Story of a Gold-seeker.* By Emil Ludwig. Pp. 227, with 7 illustrations. Cloth. Price, \$3.50. Boston: Little, Brown & Company. 1931.

Ludwig has presented to us another of his fascinating biographies in his studies of Schliemann. "My earliest ideas of greatness and glory, of legend, poetry and scholarship, were linked with his name," writes Ludwig in his preface. "Everything about him was romantic, the kings whose treasures he unearthed, those others who bestowed treasures upon him—and yet, what sticks in my memory is his kind brown eyes." The poignant, human element of the unusual Schliemann is thus vividly portrayed by one who knew him intimately.

The story of this individual is woven largely around translations of actual notes and letters written to and by Schliemann. It tells of his uphill struggles against great obstacles, the accumulation of a vast fortune which he later spent freely to see the fulfillment of a childhood dream, that of investigating for himself as an amateur archeologist the authenticity of the "Tales of Homer." It is said that what we fancy as children, we will often like throughout our entire lives. It is interesting to note in this connection that before Schliemann was ten years old, he had heard read the fantastic tales of Homer, tales which, no doubt, most of us have at times vicariously enjoyed. Schliemann was not content with such elusive emotions, nor with curiosity. As his biography is unfolded in these pages, we learn that he never once lost sight of his original purpose to personally explore the romantic footsteps of his Olympian heroes. He so saturated his mind with all the known facts about Troy, that he assimilated wherever possible even consciously or unconsciously the very habits and ideals of all that was associated with the ethnic and social culture of Greece. An example of this influence is seen in his marital experiences. Divorced from his first wife, a Russian, he married a woman of Greek nationality because of sentimental love for all things associated with that country. It was a fortunate venture, this second one, because it provided closer alliance with the material as well as the spiritual Greece to which he was so attached. Throughout his entire life Schliemann never swerved from his desire to attain complete Greek orientation.

Including a lengthy preface, the book is composed of a chronological table and five chapters, as follows: "Shadowed Youth," "The Gold on the Earth," "The Gold Under the Earth," "Envy of the Gold," and "The Gold Becomes Dim." By skillful repetition there is subtly developed by Ludwig, a central theme which becomes the *leit motif* of the work; namely, that Schliemann's great wealth with its consequent power does not bring him peace nor everlasting happiness until he has dedicated its re-

sources to the more noble cause of service to mankind. As the author has used a certain similarity in his chapter headings, so in his subject matter has he continually cited numerous excerpts which tend to more clearly exemplify the moral of this man's life.

It is the opinion of the reviewer that the story is overdrawn. Indeed, the narrative becomes monotonous and tiresome long before the end is reached. The pitch of interest aroused by the preface and opening chapters dwindles, and the sordidness of the story overtakes one's sustaining interest. Fatigue of the mind finally intervenes to cloud and spoil a truly splendid effort.

We would, however, recommend this book for leisure moments, for interrupted reading; to browse through rather than read continuously, whereby delightful entertainment may be had. Ludwig leaves his reader with the feeling that Schliemann, a contemporary who attracted the interest and profound admiration of Gladstone, was possessed of such a character that he will impress and inspire all who are privileged to read about his life.

AN INTRODUCTION to PHARMACOLOGY AND THERAPEUTICS. By J. A. Gunn, M.D., D.Sc. (Edin.) M.A. (Oxon.), Professor of Pharmacology in the University of Oxford and Fellow at Balliol College, etc., etc. Second Edition. Pp. 233. Cloth. London and New York: Humphrey Milford (Oxford University Press). 1931.

The author has appropriately chosen as his text for this small volume one of the Goldsmith platitudes: "Were the angels to write books, they would never write folios." This is a sentiment seldom adhered to by average authors of medical books and runs true to experience in the voluminous material found in books on pharmacologic subjects. The present volume is a concise and condensed exposition on the subject of pharmacology in therapeutics. The material is presented in that informal and pleasing style attractive and appealing to readers. It was intended as an introductory presentation to pharmacology and as such the work has been successfully accomplished. In order to include most of the essential topics within the limited space of this volume, a great amount of detail has of necessity been sacrificed for the sake of brevity. There is little that can be said in criticism of this because the book thus gains in interest where it loses in detail, and no doubt such was the author's purpose from the very outset. The book has apparently fulfilled a popular demand and, no doubt, explains the rapid exhaustion of the first edition. Many suggestions arise in our mind which we felt might have been included in the second edition: A conservative evaluation of the context of the book, however, makes one favor the plan adopted by the author. As it stands, the structure of the book is coherent, intelligent, as well as appealing to our interest. It is pocket sized and can comfortably be carried about for reading purposes as we travel back and forth during a day's labor.

INTERNATIONAL ABSTRACTS

Electrosurgical Extirpation of the Tonsils in the Tuberculous. Preliminary Report. A. R. Hollender, M.D.

Illinois M. J., 41:131, (Feb.) 1932.

A tradition which has existed for years in some of the leading sanatoria forbids the surgical removal of the faucial tonsils unless the tuberculous disease has become arrested. While authorities still differ, the consensus of opinion seems to be that active tuberculosis of the lung is very prone to light up and spread rapidly under the depressing effect of operation. Some writers warn that surgical treatment of all tonsils in the tuberculous should be avoided if possible.

Hollender subjected twenty adult patients with varying degrees of tuberculosis to electro-coagulation of their tonsils. The plan was fractional extirpation. The purpose of the experiment was carried out at the Chicago Municipal Tuberculosis Sanitarium was to determine whether the tonsils could be extirpated, irrespective of the time or number of treatments, without deleterious effects on the progress of the pulmonary disease.

While complete removal was not performed in all cases, more than 200 treatments were given without harmful influences on the pulmonary disease. There was no aggravation of the laryngeal infection. Aside from a local tissue reaction and a slight discomfort in swallowing there were no untoward symptoms. The patients partook of their regular meals and followed their usual sanitarium routine.

The rationale of electrocoagulation of the tonsils in the tuberculous can be explained on the basis of several factors and these are noted in the original article. The problem of slow convalescence and the factor of nutrition are considered.

This study reveals the possibility of eliminating the hazards of surgical removal of the tonsils in the tuberculous by fractional extirpation with diathermy. Among the advantages of the method are: the absence of primary and the infrequency of secondary hemorrhage; the reduction of trauma as compared to surgery; sterilization of the tonsils after one or more treatments; the avoidance of slow convalescence and interference with regular nutrition. While the series is small, diathermy should be seriously considered as the method of choice for the removal of diseased faucial tonsils in the tuberculous.

Effects of Deficiency in Vitamins in Infancy: Caries of the Teeth and Vitamins. C. E. Bloch.

Am. Jour. Diseases Child., 42:263, (August) 1931.

In man, deficiency in vitamin A has no specific injurious effect on the formation and calcification of the teeth. A disposition to dental caries, therefore, cannot be due to deficiency in vitamin A in infancy.

Probably the same applies to a deficiency in vitamin B and C; in this respect one cannot apply the conclusions from experiments on guinea pigs to man. Guinea pigs are hypersensitive to deficiency in vitamin C, and their incisors grow continuously. In man dental anomalies are due chiefly to abnormalities of the mineral metabolism during the period when the teeth are calcifying.

This study also shows: The death rate among children is considerable after their recovery from xerophthalmia; hardly two-thirds of these children reach the age of 8 years. After this, their development goes on normally. Deficiency in vitamin A leaves no characteristic marks or defects, except in cases of advanced keratomalacia, which nearly always implies impairment of vision or blindness.—*Author's conclusion.*

Serum Therapy or Intensive Ultraviolet Irradiation for Erysipeloid. Mühlpfordt.

Dermat. Ztschr., 60:445, (April), 1931.

Two cases of erysiploid are reported in which the patients were not cured by injections of immune serum but responded to intensive ultraviolet irradiation. The author has used this treatment in thirty-seven cases successfully, and considers it the treatment of choice on account of its safety and reliability.

Excessive Ultraviolet Irradiation; Effect on the Nutrition and the Endocrine Glands of Rats. A. F. Hess and P. E. Smith.

Am. Jour. Dis. Child., 41:775, (April), 1931.

Two series of rats were irradiated with the mercury vapor lamp for a period of from five to six months or were given viosterol. Male as well as female animals were used. Those in the first series were litter mates; those in the second series, although not litter mates, were the progeny of the first series. Three intensities of irradiation were given, mild, moderate and severe. The viosterol was given in small, as well as in excessive amounts. The main object of the experiment was to note whether prolonged and intense irradiation or large doses of viosterol had a deleterious effect on the animals, as evidenced by the rate of growth and size and appearance of the endocrine glands.

The growth of the animals subjected to marked intensities of ultraviolet irradiation or given large amounts of viosterol was as good as that of animals that had lived under similar conditions, but that had not been subjected to irradiation or given viosterol. No difference was noted at necropsy between the endocrine glands of the treated and those of the untreated animals.—*Arch. Derm. and Syph.*, (September), 1931.

Wood's Glass in the Diagnosis of Ringworm. John Kinnear.

Brit. M. J., 1:791, (May 9), 1931.

Kinnear's experience with Wood's glass is that it is indispensable, but that it has some definite limitations. Hairs infected by *Microsporon audouini* are fluorescent in light filtered through Wood's glass, with a fluorescence that is characteristic brilliant green, constant and coextensive with the infection. But hairs infected by other forms of ringworm cannot be detected by this method with any certainty. Hairs affected by favus give a faint fluorescence. Almost any scaly condition of the skin gives a fluorescence because of the fluorescent properties of keratin, but in microsporon ringworm infection the fluorescence is due to the presence of *M. audouini*. Petrolatum in the scalp gives an intense blue fluorescence, which may hide that due to ringworm. Any ordinary white light may be used for illumination, if it is of sufficient intensity, and ordinary glass does not impede the necessary rays, so that condensers, etc., may be used. The fluorescing properties of the different types of fungus are considered separately.—*Arch. Derm. and Syph.*, (September), 1931.

The Effect of Large Doses of Irradiated Ergosterol on Nitrogen, Calcium and Phosphorus Metabolism in Rats. Kern, Montgomery and Still.

J. Biol. Chem., 93:365, 1931.

The foregoing authors found macroscopic and microscopic evidence of the accumulation of much calcium in the kidneys in growing rats receiving large daily doses of viosterol. Chemical analyses of those organs revealed the deposition of calcium to be much greater in females than in males. Viosterol in larger doses increases the absorption of calcium from the intestine. The excretion of calcium in the feces decreases and the excretion in the urine is greatly increased. To a lesser degree there is also a diminished fecal elimination of phosphorus. Ergosterol irradiated in alcohol produces greater disturbance of the calcium metabolism of growing rats than ergosterol either irradiated in ether or irradiated dry, on the basis both of actual weight of ergosterol fed and of the vitamin D content of the samples. It is believed that the medium in which the ergosterol is irradiated plays an important part in the development of toxicity. The nitrogen excreted in the urine seemed to have been entirely within the normal range, being affected mainly by the level of food intake. Whatever changes may occur in the way of deposition or absorption of bone in rats fed large amounts of viosterol, analyses of the leg bones of these animals show normal content of calcium, phosphorus and carbon dioxide.—*Am. Jour. Med. Sc.*, (February) 1932.

Radium and Surgery in Cancer of the Breast. John T. Moore.

Am. Jour. Surg., 15:248 (February) 1932.

The author states that he has become thoroughly converted to the use of radium as a part of the surgical procedure in operable cases of cancer of the breast. He regards all cases as operable that

showed no general metastasis, and in which the patients were not too infirm either from age or disease. After completion of the operation and all the bleeding have been carefully controlled, radium is placed in the several locations of the lymph nodes and left in position from six to ten hours. The radium is placed within a rubber tube in juxtaposition with the lymph chains and the tube temporarily fixed to the adjacent tissue. Points 1½ in. apart are marked with silk ligature, so that the radium may be withdrawn a definite distance each six or ten hours, thus insuring careful and thorough irradiation.

It has been found that radium acts effectively for from 3 to 4 cm. through the tissues. Ten-milligram needles are placed in the intercostal spaces next to the sternum and about the middle of the intercostal muscles, and left there for from twelve to twenty-four hours. These needles definitely irradiate the internal mammary lymph glands.

One or two 10 mg. needles are placed in the supraclavicular space on the side involved.

A second rubber tube containing 25 mg. of radium, is placed beneath the clavicle, so that as it is drawn downward, as before described, the whole chest wall and the skin over the wound may be well irradiated. If the radium is left in each position for from six to ten hours, it will cause an erythema of the skin which later becomes brown. This latter sign is a good index that the area has been thoroughly irradiated.

X-ray Therapy and Its Use in Carcinoma of the Cervix. Edwin L. Rypins, M.D.

J. of Iowa S. M. S., 32:70, (Feb.) 1932.

This subject is discussed at length by Rypins, who in conclusion, quotes from Heyman, of the Radiumhemmet: "Radiologic treatment excites, when carefully adjusted, a healing process characterized by destruction of the tumor cells and regeneration of the tissues which were the seat of the malignant process. In the happiest events, nothing is found in the pelvis indicative either of the disease itself or of any changes due to the treatment. In most cases, however, a moderate atrophy of the uterus and vagina remain."

Surgical Endothermy in Suprapubic Prostatectomy. Paul W. Aschner.

American Jour. Surgery, 15:321 (February) 1932.

The author presents a technic for carrying out a one step suprapubic prostatectomy, under direct vision. The incision of the vesical mucosa covering the adenomatous prostate is made with the endotherm knife to minimize bleeding from this source. After the glandular mass has been dissected out, bleeding vessels in the pouch left by the enucleation are seized with long artery forceps and effectively sealed by touching the endotherm needle to their shanks. This is simpler than applying ligatures to these deep seated vessels.

The cut edge of vesical mucosa is then sutured down into the cavity and the bladder closed about a drainage tube. No packing or bag is necessary with this technic, as bleeding is effectively controlled.

Conservative Treatment of Cancer of the Mouth and Lower Lip. J. M. Martin, M.D.

Southwestern Medicine, 15:458, (Oct.) 1931.

The authors state in conclusion:

1. In our judgment cancer of the lower lip and on the inside of the mouth in the early stages, does not frequently metastasize.

2. All cases of cancer of the lower lips are roughly grouped into three stages. All of the cases in the first and second stages usually respond promptly to radiation therapy. All cases assigned to the third stage are considered incurable from the time of the examination.

3. In the report of 119 cases of cancer of the lower lip treated by x-rays, eighty-six were in the first stage, twenty-two in the second stage, and eleven in the third stage, or incurable stage.

4. Those comprising the first and second stages—108 cases—showed no evidence of metastases during time of treatment. Later, four cases in the second stage group developed malignant nodes in the neck and died from cancer. The remaining 104 cases (96.3 per cent of the cases in the first and second stages) are still living or have died from other causes.

5. All of the eleven cases in the third stage had definite lymph nodes when first seen. All of the lesions in this stage were improved, the patients were more comfortable for varying periods of time, but they all died.

6. We are all convinced that early malignant lesions on the inside of the mouth respond remarkably well to small amounts of radium in platinum needles implanted in the tissues for seven or eight days. The interstitial use of radium inside of the mouth is augmented by highly filtered radium packs and x-ray externally.

7. Keeping the mouth as clean as possible is an important factor in the successful conduct of this class of cases.

8. Incurable cases of cancer in the mouth and on the lips can often be greatly benefited by radiation therapy, while in some cases life may be prolonged for several months and the patients given a considerable degree of comfort.

Treatment for Atrophic Rhinitis. J. S. Stovin, M.D.

Arch. of Otolaryngol., 14:617 (Nov.) 1931.

After reviewing the various factors involved in the management of atrophic rhinitis, the author describes the treatment which he has successfully employed. The nose is first cleansed by the "wet suction" method using warm physiological saline solution, until all mucus, dried scales and crusts are removed. Then each nostril is packed with absorbent cotton moistened with physiological saline; care is taken to line the mucosa completely, and the strips are long enough to extend out of the nose for at least half an inch. The galvanic current is used with either the positive or the negative pole as the active electrode; the author makes it a practice to alternate the two, making the positive pole the active elec-

trode for one treatment and the negative pole the active electrode for the succeeding treatment. The active pole is attached to the cotton protruding from the nose and the current turned on and increased slowly until the patient notices a salty taste in the mouth; it is then applied for fifteen minutes, and gradually turned off. The packs are removed and an oil applied, such as balsam of peru in castor oil. Treatments are given three times a week; and improvement is noted within a few weeks. The author has found this to be the method of choice in simple atrophic rhinitis. He has also used it in ozena, but with less satisfactory results.

Diathermy in Gynecology: Its Use, Especially in Reference to Neisserian Infections. Benedict F. Boland.

New Eng. Jour. Med., (November 5) 1931.

The author points out that diathermy has been recommended for noninfectious gynecological conditions, pelvic inflammation, Neisserian infections, and cancer of the uterus. Although diathermy does produce elevation in temperature and increased circulation, its ability to produce a through and through heating of tissue has not been proved.

The types of cases treated by the author were all positive Neisserian infections, from the acute uncomplicated case to the tubo-ovarian mass with acute pelvic tenderness. Two methods of approach were used: 1, abdominosacral, and 2, abdominosacral-vaginal route. Correct diagnosis is essential before the application of diathermy. Pregnancy, fibroids, and acute inflammation (just subsiding) are contraindications.

It was found that white counts and sedimentation time were a check in the acute pelvic inflammatory type. Cultures corresponded with smear examination. Blood pressure was not changed by the treatment. Complement fixation tests were of little value. Treatments were omitted three days before and for one week after menses for fear of aggravating the menses or producing a more fertile field for extension. The use of diathermy in dysmenorrhea, which was corrected in some cases, was not considered. Its use in chronic endocervicitis where smears are negative, as a means of stimulating cervical discharge in a latent Neisserian infection, appears extremely useful. In the treatment of Skene's and Bartholin's glands it proves a helpful adjunct. As a superior type of treatment the author feels that diathermic results when cross-checked by clinical and laboratory results have been overestimated by its advocates. In properly selected cases it has some advantages, but caution is required lest exacerbation result. Conservative measures in treating acute pelvic disease are essential. Diathermic heat of 110 to 113 degrees F. did not kill the gonococcus at one exposure. Through and through body heating did not elevate uterine temperature to over 100° F. Diathermy has a limited use in properly selected Neisserian cases. Clinical experience combined with laboratory data did not prove diathermy to be a superior method for the eradication of Neisserian infections.

Treatment of Infantile Paralysis (Red Light) with Report of Cases. M. Girdansky.

Med. Jour. and Rec., 134:168 (February 17) 1932.

The author reports striking improvements in a series of three cases of paralysis, treated with red-magenta interrupted rays. One was a youth of 20 years who had suffered from the consequences of infantile paralysis since he was 1½ years old. The patient could not lift the left leg and was forced to wear a special brace. After two months of daily treatment with red-magenta interrupted radiation he was able to walk without a brace. His improvement has been progressive. He is able to run in baseball games. He walks straighter, wears normal shoes and the toe movement is now faster. There has also been a noticeable improvement in the musculature of the calf muscles, the tendons and the bones. He was under regular treatment for five times a week for seven months, then treatment was interrupted completely until winter. The roentgenograms confirmed the physical improvement of the patient. The author also states that as an adjunct to the foregoing treatment he has also used passive and active gymnastics during which time the part is immersed in liquid mercury.

The Symptoms and Treatment of Chronic Endocervicitis. J. F. Wynn and J. W. Visser.

Med. Jour. and Rec., 134:184 (February 17) 1932.

The authors present case reports to illustrate their management of chronic endocervicitis. Treatment depends on the severity of the condition. Mild cases can often be cured with topical applications of astringents. Silver nitrate, from four to ten per cent strength is often beneficial. Even better is potassium permanganate powder applied directly to the eroded area and cervical canal. It is somewhat painful, but very effective. It should be repeated at weekly intervals.

If the infection does not respond in a few weeks to medicinal treatment, or if there are lacerations, cysts, or polyps, we cauterize the cervix thoroughly either with the electrocautery or bipolar surgical diathermy. This is done either without anesthetic, or two per cent nupercaine is applied topically. Linear cauterization is not done, except where lacerations are present when the lateral angles are so treated. In other cases, the attempt is made to cook the tissue so that a cone shaped area will slough away, and after healing the edges will invert and make a smooth cervix. Sloughing occurs in a week or two, and healing is usually complete in four to six weeks. Sometimes a second cauterization is required and amputation of the cervix is necessary in the rare cases which do not respond to cauterization.

Ultraviolet Irradiation in the Treatment of Fractures. M. Ponzio.

Radiology, 17:792 (Oct.) 1931.

The author states that experiments on animals carried out at the Hospital Humbert I of Turin, Italy, showed that intravenous injection of calcium chloride solution combined with exposure of the site of fracture to ultraviolet rays definitely hastened callus formation and fracture repair. Neither calcium alone nor the ultraviolet irradiation alone had

the same effect. The effect of the combined treatment was evident at various stages, but was especially well marked in the terminal period of fracture repair. On the basis of these experiments, combined treatment with calcium and ultraviolet ray irradiation was given hospital patients with fractures, who showed retarded or defective callus formation. In these cases the calcium was given either by mouth or by hypodermic injection. Irradiation with the ultraviolet light was given daily over the site of the fracture. In all these cases there was a marked activation of the process of repair during the course of the combined calcium and irradiation treatment, not only in patients who showed a definite calcium deficiency but also in those in which deficient calcification was apparently due to some general dystrophic process.

The Application of the Ultraviolet Ray to Dentistry. Robert J. Meade.

Med. J. and Record, 134:591 (Dec. 16) 1931

Meade concludes that the oral cavity cannot be successfully treated as a separate entity. The several parts of the body form a connected whole. The tissue cells in whatever parts of the body they may be situated, are subjected to and are controlled by the same general laws. For example, if the normal germicidal property of the blood is lowered the same disastrous results will befall a wound whether in the abdomen, or at the apex of a tooth root. Conditions that would respond to treatment in a healthy individual, that is to say, with a normal bactericidal action of the blood, may in an unhealthy organization resist the effect of treatment.

If when abscessed conditions prevail in the mouth, it is considered unwise to expect a favorable result in the treatment of what is called "a run down condition," a case of general debility, it is also unwise to expect a successful termination in the treatment of mouth conditions when any diseased organ of the body is vitiating the fluids which bathe the tissue cells. Dentists must realize the direct relationship, as regards cause and effect, that exists among the different parts of the body. It is not the mouth that we are finally concerned with, but the general health of the individual as related to the conditions of the oral cavity. It is only in this way that we may hope to realize the possibility of our profession in rendering service to mankind.

Radium Treatment of Carcinoma of the Cervix. Preston T. Brown, M.D.

J. Iowa S. M. S., 21:678.

The author's summary is as follows:

1. Epidermoid carcinoma of the cervix is a lesion which responds to radiation applied under satisfactory conditions.
2. Careful pre-radiation care and control by follow-up are very necessary.
3. Results equal to those obtained by surgical procedures (radical, Wertheim, or Schauta hysterectomy) are obtained in early cases by radiation. The mortality and morbidity are much less with the latter type of treatment. Simple total hysterectomy, supravaginal hysterectomy, and amputation of the cervix, as so frequently performed, are not worthy of comparison, since there is practically no

chance that they will do anything but hasten the patient's death.

4. Proper technic requires a highly trained personnel and adequate physical equipment.

5. Failure of early diagnosis presents the greatest problem at the present time, and the blame for delay rests equally upon the medical profession and upon the public.

Further Observations Regarding Heat Therapy in the Treatment of Syphilis. E. A. Purdum, M.D.
Tri-State Med. Jour., 3:665 (Aug.) 1931.

The article by Neymann and Osborne in the *Journal of the A. M. A.*, last January gives one of the most complete reports on the method of giving diathermy in paresis and also as to the results obtained of any contribution which has appeared during the past year. They were able to treat a series of twenty-five patients suffering from paresis and to report 66 per cent definitely obtaining a clinical remission, while 8 per cent were markedly improved. No serious harm resulted to these patients from the treatment, and there were no deaths in the series directly or indirectly ascribable to the treatment. They did have one case in which the treatment was not watched carefully enough, and the final temperature reached 108.5 degrees F., but the patient was saved by the proper use of ice and cold water, but an acute nephrosis with albuminuria and many hyaline casts developed and lasted for three days, but apparently cleared up entirely by that time. It is found to be very important in producing fever by this method to have the temperature readings made by rectum rather than by mouth.

During the past two years we have systematically prescribed the baths in a manner to give as much rise of temperature as the patient could tolerate in the cases of nervous system involvement, and it is now evident that this is a valuable addition to the routine which we carry out in the treatment of these cases, and no doubt will gradually prove of additional aid to us as we learn more.

While, as stated previously, it appears that the use of diathermy for the production of artificial fever offers practically no mortality, yet we believe that with the baths of Hot Springs equally as good results in this respect can be obtained and that probably other beneficial changes in the body occur, although as yet undemonstrated, and we have not thus far seen any evidence of nephritis or other abnormal tissue changes occurring following the production of fever in this manner, and it is our belief that as this knowledge is gradually spread to the medical profession of this country, that we will have more and more patients suffering from the late manifestations and the nervous system changes occurring from syphilis coming to us for the wonderful baths and treatment as indicated with them. — (*The Rad. Rev.*, Jan., 1932.)

The Use and Abuse of Physical Therapy in the Treatment of Industrial Cases. T. E. P. Gocher, M.D.

The Med. Herald, Phys. Therapist and Endocrine Survey, 51:9 (Jan.) 1932.

In a careful analysis of the subject, Gocher

discusses such phases as disability causes, diagnosis, psychology, treatment, mental attitude, the injury and treatment faults. The latter because of their significance are quoted *verbatim*.

At the present time industrial physical therapy is not in very good standing among certain companies writing industrial insurance. There are many reasons for this, and in some cases they are fully justified. This method of treatment is not considered by many surgeons as an accepted form of treatment, and until it is recognized, physical therapy will not attain its true place in the management of industrial injuries. Following are some of the reasons for its poor standing:

1. The results obtained are often poor, in many cases very poor. The disability is often greatly prolonged.

2. Surgeons fail to take any interest in this treatment, and so give it or order it half-heartedly.

3. Many surgeons employ only one modality and call that physical therapy. Then they wonder why they do not get results, and accordingly blame physical therapy.

4. The vast majority of average physicians do not understand the primary uses and principles of this form of treatment. Books on the subject are often so technical that interest is lost before they are half read.

5. Many surgeons fail to study and use psychology in the treatment.

6. In many instances the treatments are given for too long a time, and the resulting overtreatment causes the injured man to become worse and develop neurotic tendencies.

7. Too many doctors believe that physical therapy is a "cure-all," and fail to study their cases before ordering this form of treatment.

8. Many physicians rely on someone else, as their technicians, to give instructions and render the treatment.

9. A thorough diagnosis is not always made, and as a result the best treatment is not always given. The therapy for bone, muscle, and nerve pathology is different in each case. This is especially true in strain in the smaller joints of the spine, such as the lateral lumbo-sacral joint.

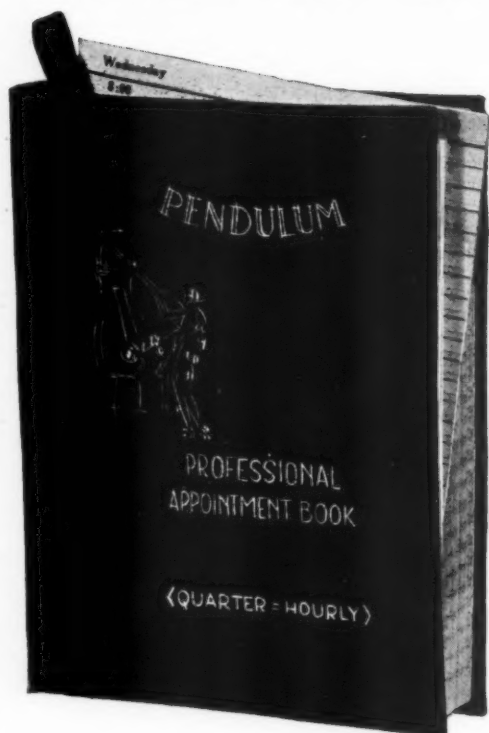
10. Too often the doctor believes that one form of treatment will cure everything.

These points will be sufficient to give some idea as to the causes of failure to obtain the desired results, and why industrial physical therapy does not have the standing that it should.

NOTE: This paper is based on personal experience and not upon tables of the Aetna Life Insurance Company.

WANTED—An experienced young lady physiotherapist for full-time position. Must be good-natured, diligent, and tolerant. Office clientele mostly of Slavic races. State conditions, also as to previous experience and where. Write to Dr. J. Mindess, Timmins, Ontario, Canada.

TUNE IN ON EFFICIENCY



Use the

PENDULUM APPOINTMENT BOOK

A new idea in an appointment book that you will appreciate. A volume of convenient size that you will delight to handle.

CONTINUOUS CONVENIENT COMPACT

A handsome book beautifully and artistically bound in green art vellum with gold lettering. A new and unique appointment book of 416 pages, size $6\frac{1}{4} \times 4\frac{1}{2}$, allowing you to have everything at hand. Arranged in Quarter-Hourly periods. You can commence the book at any time.

SPECIAL FEATURES

- A telephone directory—room for 200 names.
- A blank page at the end of each week for a summary.
- An attractive book-mark.
- A list of dates to remember.

Price, \$1.50

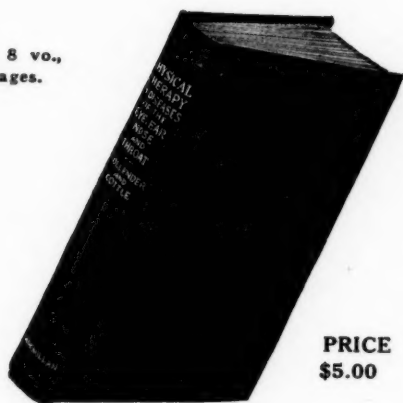
THE PROFESSIONAL PRESS, INC.
5 N. Wabash Ave. CHICAGO, ILLINOIS

PHYSICAL THERAPY

IN DISEASES OF THE

EYE, EAR, NOSE and THROAT

Cloth, 8 vo.,
307 pages.



PRICE
\$5.00

"The whole spirit of the book is temperate and scientific."

JOURNAL OF OPHTHALMOLOGY,
OTOLOGY AND LARYNGOLOGY.

Therein lies the secret of the substantial reputation which this book has gained. It is the only book on Physical Therapy in the English language restricted to eye, ear, nose and throat practice. One seeking authentic information on the uses of light, heat, and electricity in this special field turns normally to the authoritative book on the subject.

Hollender & Cottle's
PHYSICAL THERAPY
IN DISEASES OF THE
EYE, EAR, NOSE AND THROAT

THE MACMILLAN COMPANY

Publishers

NEW YORK

BOSTON CHICAGO SAN FRANCISCO
DALLAS ATLANTA

BY
A. R. HOLLENDER, M.D.

Attending Otolaryngologist,
American Hospital of Chicago;

AND

M. H. COTTLE, M.D.

Attending Otolaryngologist,
Illinois Masonic Hospital, Chicago.

Comments of Reviewers —

"An up-to-date presentation of the application of Physiotherapy to a specialty — the book is very well written and the publisher has presented an excellent volume clearly printed and illustrated."

— *Long Island Medical Journal.*

"We take pleasure in calling the attention of the Profession to this work. It is unusual in works of this sort to find such conservatism. The book is free from padding and the authors have stated their opinions, technique and conclusions clearly, simply, and impartially."

— *Journal of Ophthalmology,
Otology and Laryngology.*

"The book is the best that we have seen in the specialty that it covers."

— *The Radiological Review.*



USE THIS COUPON NOW

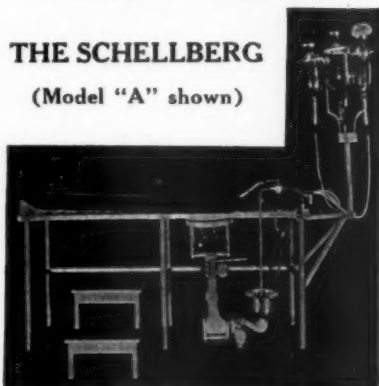
THE MACMILLAN CO.,
60 FIFTH AVE., N. Y. C.

Please send me one copy of Hollender and Cottle's
**PHYSICAL THERAPY OF THE EYE, EAR, NOSE
AND THROAT.** Check herewith or charge my
account.

AN UNEXCELLED APPARATUS COLONIC THERAPY

THE SCHELLBERG

(Model "A" shown)



Characteristic features (1) 3 percolators with individual electric heating units (2) Gadget, hydraulic device, indicates flow of solutions and muscular tone of the intestines (3) Accelerator (2-way valve), has syphonic action that permits quick removal of gas and residue (4) Cecum Tube with depressed eyes and "Schellpoint" for application of medicated solutions, particularly to the cecal area (5) Drainage bowls with sewer connection (6) Sanitary flushing hose provides easy means for cleaning bowls.

Models for office, hospital, and home use in a wide and attractive price range.

Send for authoritative reprints and illustrated catalog.

Schellberg Manufacturing Corporation
172 Chambers Street NEW YORK CITY

PHYSICAL THERAPEUTICS

Incorporating

**THE AMERICAN JOURNAL OF
ELECTROTHERAPEUTICS**

and

RADIOLOGY

Established 1881

OWNED AND PUBLISHED BY

**The American
Electrotherapeutic Association**

With the following Editorial Board:

Mary L. H. Arnold Snow, M.D.,

Editor in Chief

C. C. Vinton, M.D., Managing Editor

Frederic deKraft, M.D.

Byron Sprague Price, M.D.

Herman G. Wahlig, M.D.

W. S. Russell, M.D.

Business Manager

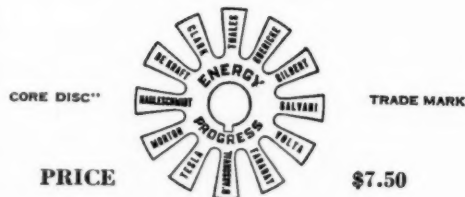
**A SPECIAL JOURNAL
for Every Specialty**

Designed to meet the needs
of modern practice

Office of the Business Manager
585 West End Avenue NEW YORK CITY

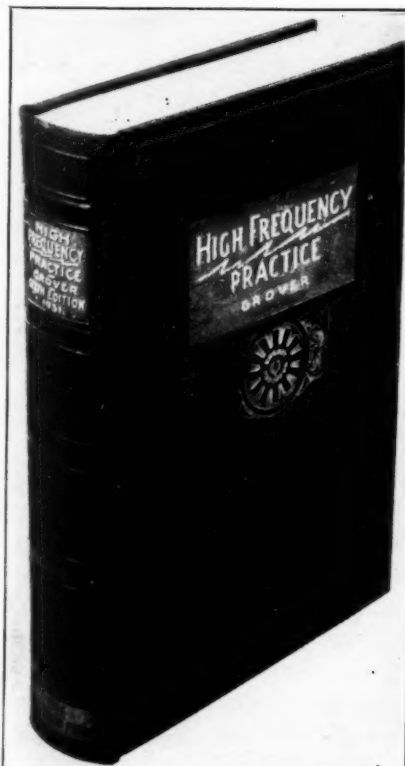
GROVER'S NEW

High Frequency Practice



PRICE

\$7.50



THE SOVEREIGN ACHIEVEMENT IN

THE REALM OF PHYSICAL THERAPY

600 Pages, 6x9 in. 140 Illustrations.

REWRITTEN FROM COVER TO COVER, contains the last word in treatment, and is illustrated by many full-page halftones, which demonstrate the author's technic.

THE HIGH FREQUENCY MACHINE—"Essentials of a Good Machine and How to Choose," a new chapter, invaluable to those who are about to purchase equipment. Price, post-paid to any part of the world, \$7.50 Send post-card for Prospectus.

THE ELECTRON PRESS

204 B. M. A. Bldg., Kansas City, Mo.

Pacific Coast Office, 4607 Melrose Ave.,
LOS ANGELES, CALIF.

Send for our Select List of Fifty New and Important Books
on Various Subjects.